Landfills 8 and 10

1998 Management Action Plan

Wright-Patterson Air Force Base

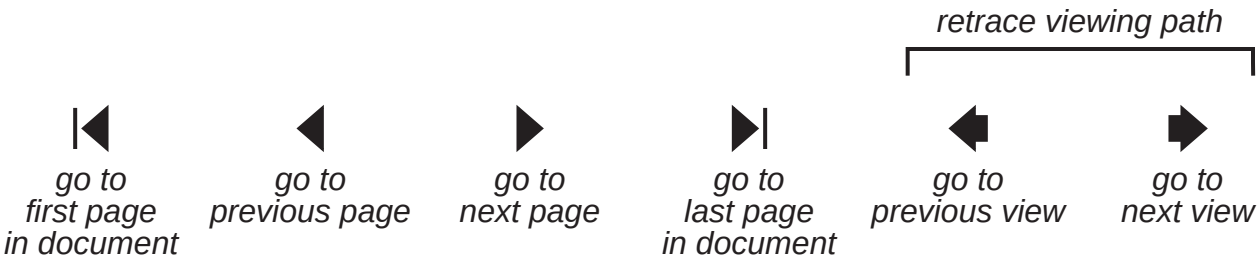
88 Air Base Wing
Office of Environmental Management
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management
Wright-Patterson AFB

March 1999

Navigation notes:

For easiest navigation, extensive use of "bookmarks" has been made. To view a given Section, simply click on the desired Section heading. A "+" sign indicates collapsed subheadings can be found by clicking on the "+". To re-collapse the heading, click on the "–" sign. Use the *Page Up* and *Page Down* keys to move to adjacent pages. You can also navigate by single-clicking the arrow buttons on the toolbar at the top of the Acrobat Reader window (see the diagrams below for an explanation).



1998
Management Action Plan Update

88th AIR BASE WING

OFFICE OF ENVIRONMENTAL MANAGEMENT
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

March 1999

INSTALLATION RESTORATION PROGRAM

Management Action Plan Update

March 1999

Prepared by:

88th ABW/EMR

Office of Environmental Management

Wright-Patterson Air Force Base, Ohio

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Chapter 1
Introduction and Summary

This Management Action Plan (MAP) contains a status summary of the Wright-Patterson Air Force Base (WPAFB) environmental restoration and compliance programs and presents the comprehensive strategy for implementing response actions necessary to protect human health and the environment. This strategy integrates and coordinates activities under both the Installation Restoration Program (IRP) and the Environmental Compliance Program (ECP) to support Base remediation and compliance objectives. This MAP is the sixth update of the initial December 1992 MAP. It will continue to be reviewed annually and updated as necessary. This MAP:

- Describes the objectives of the Base's environmental restoration program, the MAP's purpose, and the project team formed, and provides a brief history of the installation (Chapter 1)
- Summarizes the environmental condition of the entire base property (Chapter 2)
- Summarizes the status of the WPAFB IRP and ECP, accounts for all known contaminated sites, and defines the regulatory programs under which each is being addressed (Chapter 3)
- Describes the installation-wide strategy for environmental restoration through definition of operable units (OUs) and the scope of removal and remedial activities associated with (or to be completed for) each, summarizes plans for managing underground storage tanks through the underground storage tank (UST) program, and summarizes plans for managing responses under other compliance programs (Chapter 4)
- Provides a master schedule of planned and anticipated activities to be performed throughout the duration of the environmental restoration program, including restoration-related compliance activities (Chapter 5)
- Describes specific technical or administrative issues to be resolved by the WPAFB project team, and a strategy and approximate schedule for their resolution (Chapter 6)
- Provides summaries of past fiscal year funding requirements (Appendix A), IRP report deliverables (Appendix B), and Records of Decisions

(Appendix C), ROD Declarations (Appendix D), monitoring well, UST, and sanitary sewer locations (Appendix E), and Conceptual Models (Appendix F)

1.1 Environmental Response Objectives

The objectives of the environmental restoration program at WPAFB are to:

- Protect human health and the environment
- Comply with existing applicable statutes and regulations
- Conduct all IRP activities in a manner consistent with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA)
- Meet all requirements and deadlines of Federal Facility Agreements (FFA) also known as Interagency Agreement (IAG) with U.S. EPA Region 5 and the Ohio Consent Order (OCO) with the Ohio EPA (OEPA)
- Continue efforts to identify all potential source areas
- Establish priorities for environmental restoration and restoration-related compliance activities so Air Force property disposal and reuse goals are met
- Initiate selected removal actions to control, eliminate, or reduce risks to manageable levels
- Identify and map the environmental condition of installation property including areas of no suspected contamination (ANSCs), and characterize risks associated with releases of hazardous substances, pollutants, contaminants, or hazardous wastes
- Complete site investigation (SI) and remedial investigations (RIs) as soon as practicable for each zone, OU, or Area of Concern in order of priority
- Develop, screen, and select removal actions or remedial actions (RAs) that reduce or eliminate risks in a manner consistent with statutory requirements
- Commence removal actions or RAs for priority areas as soon as practicable

- Conduct long-term RAs for groundwater and any necessary 5-year reviews for ROD requirements.

1.2 MAP Purpose, Updates, and Distribution

This MAP presents in summary the status of WPAFB's environmental restoration and compliance programs and the comprehensive strategy for environmental restoration and restoration-related compliance activities. It lays out the response action approach at the installation in support of Base environmental remediation and compliance programs. In addition, it defines the status of efforts to resolve technical issues so that continued progress and implementation of scheduled activities can occur. The MAP includes specific information on:

- the history and past accomplishments of the restoration program
- the current status of the restoration program
- the future strategy, schedules and funding requirements necessary to meet the program's objectives

The MAP is updated at least annually, and specific elements are updated more often as program needs require. The MAP is distributed to personnel in the restoration and compliance branches of WPAFB, U.S. EPA, OEPA, base contractors, and the information repository.

1.3 Project Team and Environmental Advisory Board

The WPAFB project team is led by the Remedial Project Manager (RPM). Project team meetings are the primary means of resolving technical issues and reaching consensus on decisions with state and federal regulators. Table 1 specifies team members and their roles and responsibilities.

To accommodate travel schedules, project team meetings for WPAFB are planned as necessary. Meetings are scheduled to the extent possible to coincide with quarterly Environmental Advisory Board (EAB) meetings (they may be held more frequently as necessary), and they are the principle forums for resolving technical and administrative issues that impede the progress of environmental response actions. The EAB (the name used by the Wright-Patterson Restoration Advisory Board (RAB)) is also an important component of the

restoration program, providing community input to the overall strategy of site remediation as well as input on specific site remediations. The EAB members are listed in Table 2.

Issues identified as requiring resolution and being addressed in project team meetings include data quality assurance/quality control (QA/QC), electronic data management and analysis, background levels of contaminants in environmental media, data gap analysis, and risk assessment protocols. The status of planned actions for each issue is presented in Chapter 6.

Procedures for project team meetings include the following steps (when possible):

- At least 1 week before project team meetings, a written issue or proposal/agenda is submitted by the WPAFB Office of Environmental Management Restoration Branch (EMR) in consultation with regulatory members for review by participants.
- An oral presentation of the issue is given at the meeting.
- Discussion/resolution of the issue takes place. Follow-on issues are identified as Action Items.
- WPAFB EMR documents any resolved issue and indicates the status of any unresolved issues in meeting summary.
- Meeting summary is prepared by WPAFB EMR and distributed to the project team for approval.
- Program modifications are made where appropriate.
- Discuss MAP updates at least annually or as needed.

1.4 WPAFB Background Information

1.4.1 Location

WPAFB is located in southwestern Ohio between the Cities of Dayton and Fairborn and occupies portions of Greene and Montgomery Counties. The installation is composed of Wright Field and Patterson Field, which are separated by State Route 444 and the ConRail Corporation railroad tracks. Area B comprises Wright Field and Patterson Field comprises Areas A and C. Headquarters to the Air Force Materiel Command (AFMC) and home to organizations such as Wright Laboratory (WL), Air Force Institute of Technology (AFIT) and the Aeronautical Systems Center (ASC). The Base has a significant proportion of its

acreage devoted to logistical support/warehouse land uses, research and development, land uses, and administrative and classroom space. Airfield functions constitute 24 percent of all on-base land uses. The Base has more than 2,500 acres of undeveloped land, but much of that acreage is restricted from certain types of development by environmental constraints, such as flood plains, steep slopes, Indian burial mounds, and other cultural/natural features. Other constraints, such as a national park, laser testing facilities, landfills, explosive safety zones, and clear zones for runways, also restrict development in certain areas.

Area B encompasses about 2,800 acres and three runways that are no longer used for flying. The Aeronautical Systems Center (ASC) and Wright Laboratory conducts research and development activities in Area B.

Areas A and C encompass about 5,711 acres. Area A has a mixture of land uses ranging from storage and warehousing to offices and classrooms. Area C is used for flying activities. The area bordering the City of Fairborn is used for office, storage, industrial, and flight line facilities. Figures 1 and 2 present the existing land use for the Base and vicinity.

1.4.2 Environmental Setting

1.4.2.1 Topography and Surface Drainage

WPAFB lies within the Mad River Valley. Where the airfields are located, the terrain is generally level. In the higher areas to the southeast where much of the Base housing and support facilities are located, the terrain is gently rolling. Total relief for the facility is as much as 200 feet with the lowest elevation being about 780 feet above mean sea level.

Besides the northeast-southwest trending Mad River Valley, the other principal topographic feature is a high salient running southeast to northwest. This feature, caused by the protrusion of underlying bedrock, produces a bottleneck in the river valley that separates the old Wright Field from the active runway area. The Huffman Dam, an earthen structure, spans the valley at this narrow point.

Surface drainage from WPAFB runs ultimately to the Mad River by way of Hebble and Trout Creeks and several small-unnamed tributaries.

1.4.2.2 Geology

The bedrock beneath WPAFB consists of gently dipping sedimentary rock of Ordovician and Silurian age. The Richmond group, consisting of shale with thin limestone interbeds, is of Ordovician age, and directly underlies the unconsolidated sedimentary deposits of the Mad River Valley. In areas of higher topography, the Richmond group is overlain by the

Brassfield Limestone, a relatively pure gray to brown fossiliferous limestone that occasionally crops out on the hillsides.

Unconsolidated, glacially related outwash and tills are the predominant sediments directly underlying the installation. Over 250 feet of sand and gravel outwash fills the ancient valley that underlies the airfields. Interbedded in the porous sand and gravel outwash are discontinuous thick lenses of relatively impermeable clay till.

1.4.2.3 Hydrology/Hydrogeology

The bedrock shales and limestones are not significant as existing or potential sources of groundwater in the area. The major aquifers in the Dayton area are the glacial drift deposits.

The principal water-bearing zones in the valley aquifer are in the highly transmissive outwash sediments that are up to 200 feet thick and saturated from a few feet below the ground surface. These zones are used as the source of water for on-base water supply wells, City of Dayton Wellfield (downgradient) and City of Fairborn Wellfield (upgradient). At WPAFB, outwash is locally separated from overlying alluvial materials by 2 to 7 feet of dense, unsorted till composed of clay, silt, gravel, and sand. In many areas the till layer is thin or absent, and the outwash deposits are directly overlain by alluvium. Also, in many areas a layer of till, and sometimes more than one layer, occurs within the glacial outwash dividing it locally into separate hydraulic units.

Recharge to the water table is by direct percolation through soils and by recharge from surface streams, including the Mad River and its tributaries, Hebble Creek and Trout Creek. The Base in general is a recharge area. Artificial ponds have been maintained specifically to enhance recharge around the Dayton wellfield immediately downgradient of the base.

Groundwater flow in the valley is generally to the southwest in the same direction as surface water flow. Groundwater flow from Areas A and C converges near the Huffman Dam as a result of the narrowing of the valley aquifer. The elevated bedrock below the non-airfield portion of Area B results in groundwater flow to the north and west and saturated thicknesses on the order of 10 feet or less in the unconsolidated deposits. Locally, groundwater flow is affected by depressions caused by pumping; such as at the Dayton and the Base water supply wells, and by mounding of the groundwater table produced by areas of recharge.

1.4.2.4 Human and Environmental Receptors

The potential exposure route of greatest concern at the Base is ingestion of contaminated drinking water. WPAFB obtains its fresh water resources from actively pumping groundwater production wells in Areas A, B, and C of the Base. There are 15 active

production wells at the Base, with the available capacity to pump up to 17.4 mgd. The east wells (wells A to F) are used as backup wells for Area B. The locations of the Base pumping wells are shown in Figures 3 and 4. Also shown in Figure 4 is the location of the Rohrer's Island wellfield operated by the City of Dayton. Both WPAFB and the City of Dayton test groundwater on a routine basis as required by the Safe Drinking Water Act to ensure that the groundwater consumed by residents is free of harmful levels of contaminants. The City of Fairborn maintains a wellfield immediately east of Area C for emergency use in drought conditions.

Other exposure routes of concern for human and ecological receptors include ingestion, dermal adsorption, and inhalation of contaminated soils, surface water, and sediments.

Several small streams on Base and the Mad River, which flows along the northwest boundary of the Base, are potential receptor locations for surface water and sediment media.

1.4.3 Past Operations

The Wright Brothers began experimental flying in 1904 on the Huffman Prairie located in Area C of WPAFB. From 1910 to 1916 they operated a pilot training school at the same site. Wilbur Wright Field, located in Area C, began operations in 1917 as a training school for pilots, mechanics, and armorers. The Fairfield Air Depot, located in Area C adjacent to Wilbur Wright Field, began operations in 1918 as a general supply depot and a regional aircraft engine repair hub. In 1927 Wright Field, located in Area B of WPAFB, was constructed to replace McCook Field in Dayton. Wright Field was headquarters for the Army Air Corps Material Division with responsibility for all research and development work for military aircraft and components. In 1931 the Fairfield Air Depot portion of the Field was renamed Patterson Field. Wright and Patterson Fields experienced dramatic expansion during World War II. Employment increased from 3,700 to nearly 50,000. New buildings were constructed to increase office, hangar, laboratory, and test facilities at Wright Field. Patterson Field saw construction of new runways, warehouse buildings, barracks, and offices. Following the war employment decreased to about 25,000. Research and development work continues today.

Hazardous substances associated with past activities are largely related to (1) storage and use of fuels, (2) burning of waste solvents and fuels in fire protection training areas, and (3) the production of waste oils, cleaning solvents, waste fuels, and acids in research and development laboratories and aircraft maintenance facilities. The Phase I records search listed numerous individual industrial shops (Areas B and C) and research and development laboratories (Area B) where hazardous substances were used or generated. Hazardous substances reportedly of onsite include:

Nickel acetate
Cadmium oxide powder, sodium cyanide, caustic soda
Trichloroethene and trichloroethene sludge
Paint strippers, removers, thinners, and waste paint and strippings
Carbon remover, PD-680, hydraulic fluid
Enamel paints
Solvent wastes
Miscellaneous chemicals
Plating solutions

Table 3 summarizes the history of WPAFB operations. Locations of past hazardous substance and petroleum activities are shown in Figures 5 and 6.

Chapter 2
Condition of Property

2.1 Installation-wide Source Discovery and Assessment Status

In 1981 the IRP was initiated at WPAFB and began with a Phase I, problem identification and records search conducted by Engineering-Science. Phase II, Stages 1 and 2 were subsequently conducted for the 33 sites initially identified. WPAFB entered into an Ohio Consent Order (OCO) with the OEPA in February 1988. The OCO specifies requirements for conducting preliminary assessments (PAs), site investigations (SIs), RIs, feasibility studies (FSs), remedial designs (RDs), and RAs at the Base.

After the U.S. EPA listed WPAFB as a National Priorities List (NPL) site in October 1989 (bringing it into the Federal Facility Provision of CERCLA §120), WPAFB entered into an FFA with the U.S. EPA that establishes a procedural framework and schedule for implementing and monitoring response actions at the site. The FFA was signed in March 1991.

As part of the IRP, an RI/FS Work Plan was developed for 39 potential waste disposal sites. WPAFB grouped the sites into 12 OUs and prioritized them from high to low. In 1994 OU-12 was incorporated into OU-9, and a groundwater-monitoring program was designated for the entire Base which is referred to as the Basewide Monitoring Program (BMP). Twenty-five other sites were also identified and have undergone PAs and SIs. Most of these additional sites were grouped into those 11 OUs. IRP site and OU locations are presented in Figure 3 for Areas A and C and in Figure 4 for Area B. In 1996, an addendum to OU9 (DRMO SWMU) and OU4 (Mercury Site) RI were added.

Burial Sites 5 and 6, were two areas of concern, located in Area B, possibly waste paint, solvents, and unknowns were buried. Previous WPAFB employees and/or residents of surrounding area brought information forth in 1996. A PA/SI was completed in June 1998.

In 1997, Building 59A, Area B became an Area of Concern and is undergoing a PA/SI in 1998/1999. The WPAFB emergency response team was called concerning a flooded basement in Building 59A. The basement water was sampled and has been found to contain halogenated VOCs. Further investigation has identified a source of TCE in Bldg 59A. Groundwater-monitoring wells have low levels of TCE, but above MCLs. Investigation is continuing to discover the source that also contaminated Bldg 59C-sump pit.

WPAFB prepared and submitted a RCRA Part B permit application for Area B Hazardous Waste Storage Facilities (June 1992). The Part B permit was signed on June 30, 1994, and went into effect August 14, 1994. The Hazardous Waste Facility Board of the State of Ohio approved modifications to the permit on September 29, 1995. The Part B permit was updated in 1998 and is currently under review.

The Area B Part B permit application lists 53 active and inactive SWMUs, of which 15 are IRP sites. Based on a review of information contained in these documents, there are two SWMUs where releases are known to have occurred, are not included in the IRP, and potentially require corrective action. The DRMO SWMU was covered under the OU9 addendum. SMWU 18-A is a parking lot and was paved in July 1997 and the Basewide Monitoring Program is addressing the groundwater.

The WPAFB sanitary sewer collection system is not listed as a SWMU because there is no direct evidence that releases of hazardous substances occurred from the sewers. However, potential releases from the sanitary sewers will be considered in the development of SI/RI/FS work plans and investigated if soil or groundwater analytical results indicate releases may have occurred. The location of the main sanitary sewer system (sewers ≥ 10″ diameter) is shown in plates 1 to 4 (Appendix E).

2.2 Environmental Condition of Property

Concentration contours for principal contaminants in groundwater were developed for principal groundwater contamination based on the results of the PAs, SIs, and RIs through October 1998. Contaminant concentrations in soil are not contoured because of the lack of sufficient data and the greater variability of the horizontal distribution of contaminant concentrations.

The principal groundwater contaminants chosen for contouring are benzene, toluene, ethylbenzene, and xylene (BTEX), trichloroethene (TCE), and tetrachloroethene (PCE). The BTEX were chosen because of the prevalence of USTs and petroleum spill sites and the existence of several BTEX plumes at WPAFB. BTEX concentration contours based on data available through October 1998 are presented in Figures 7 and 8. Additional BTEX plumes may exist in unevaluated areas.

TCE and PCE were chosen because of their presence in the Base water supply wells and because they are the most consistently detected contaminants other than the BTEX. TCE and PCE concentration contours based on data available through October 1998 are presented in Figures 9 and 10. Isolated detentions of TCE and PCE are also shown in these figures.

Based on current knowledge of the environmental conditions, sites at WPAFB were categorized into seven types of areas:

- Areas Where No Storage, Release, or Disposal Has Occurred
- Areas Where Only Storage Has Occurred
- Areas Where Storage, Release, Disposal, or Migration Has Occurred but Requires no Remedial Action
- Areas Where Storage, Release, Disposal, or Migration Has Occurred and All Remedial Actions Have Been Taken
- Areas Where Storage, Release, Disposal, or Migration Has Occurred, and Action Is Under Way but not Final
- Areas Where Storage, Release, Disposal, or Migration Has Occurred but Required Remedial Actions Have Not Been Taken
- Unevaluated Areas or Areas Requiring Additional Evaluation.

Figures 11 and 12 summarize the status of information on the environmental condition of property for soil media for Areas A and C and Area B. Figures 13 and 14 present a summary of the status of information on the environmental condition of property for groundwater for Areas A and C and Area B. The locations of all existing groundwater and leachate monitoring wells are shown on figures 1 through 4 in Appendix E. The BMP is under way and the monitoring data obtained will be used in reevaluating and refining the area designations in subsequent MAP updates. The BMP study should be complete by September 1999. Long-Term Monitoring (LTM) for the groundwater operable unit under the BMP will continue until remedial objectives are met (<mal)

2.2.1 Type 1—Areas Where No Storage, Release, or Disposal Has Occurred

Type 1 areas are defined as geographically contiguous areas where the results of investigations show that no hazardous substances or petroleum products were stored, released into the environment (at detectable concentrations), or disposed of on site property. These areas were determined based on the results of the PAs, SIs, and RIs through December 1999. For soils, Type 1 areas typically lie outside the known IRP and SWMU sites identified. Continued evaluation of RI data and any new information obtained regarding past disposal practices will be used to revise these areas in subsequent MAP updates.

Type 1 areas for groundwater are more difficult to identify. The potential for ubiquitous contamination from numerous unknown sources of contamination to groundwater is recognized by the project team. Such potential sources include leaks from sanitary sewers (particularly those sewers downstream of research or industrial type facilities), spills throughout the history of WPAFB that are not identifiable from interviews or records review, unknown USTs, and the historical use of pesticides such as 4,4-DDT on golf courses. The potential significance of such sources is apparent because quantities as small as 1 gallon of TCE are capable of contaminating large areas of the sand and gravel aquifer at concentrations above its MCL. Even though the completion of the OU RIs and SIs are expected to more clearly define areas where significant groundwater contamination is not suspected, it is recognized that some isolated groundwater contamination may exist.

The BMP will evaluate basewide groundwater contamination. Data gathered during the BMP will also be used in identifying Type 1 areas.

2.2.2 Type 2—Areas Where Only Storage Has Occurred

Type 2 areas are defined as geographically contiguous areas at which, according to the results of investigations, only storage of hazardous substances or petroleum products occurred. As with Type 1 areas, they are not suspected of having contamination of soil or groundwater.

2.2.3 Type 3—Areas Where Storage, Release, Disposal, or Migration Has Occurred but Require No Remedial Action

Type 3 areas are defined as geographically contiguous areas where the results of investigations show that hazardous substances or petroleum products were stored, released into the environment, or disposed of, and are present at concentrations that do not require action to protect public health or the environment. Areas in which contaminants are present at concentrations below ARARs or action levels were generally based on sample results below either Safe Drinking Water Act MCLs, non-zero MCLGs, if available, risk values below 10^{-6} excess lifetime cancer risk concentrations, or values less than a hazard index of 1 for noncarcinogens for ingestion and inhalation of particulate and volatile organic compounds in soil or water. Risk assessment results were used where available.

2.2.4 Type 4—Areas Where Storage, Release, Disposal, or Migration Has Occurred and All Remedial Actions Have Been Taken

Type 4 areas are defined as geographically contiguous areas for which all remedial actions necessary to protect public health or the environment were taken. These designations are only

for sites where actions were constructed in accordance to an approved remedial design and are operating successfully.

2.2.5 Type 5—Areas Where Storage, Release, Disposal, or Migration has Occurred, and Action is Underway but not Final

Type 5 areas are similar to Type 4, but they require remedial actions and are either under design and construction or were constructed but are not yet operating satisfactorily.

2.2.6 Type 6—Areas Where Storage, Release, Disposal, or Migration Has Occurred but Required Remedial Actions Have Not Been Taken

Type 6 areas are defined as geographically contiguous areas where the results of investigations show that hazardous substances or petroleum products were stored, released into the environment or disposed of and are present at concentrations that require action to protect public health or the environment. Areas with contamination at concentrations above ARARs or action levels were generally based on sample results greater than either Safe Drinking Water Act MCLs, non-zero MCLGs, if available, 10^{-6} excess lifetime cancer risk concentrations, or values greater than a hazard index of 1 for noncarcinogens for ingestion and inhalation of particulates and volatiles in soil or water. Risk assessment results were used where available. Remedial systems or other response actions have not yet begun for Type 6 areas.

2.2.7 Type 7—Unevaluated Areas or Areas Requiring Additional Evaluation

Type 7 areas are suspected of being contaminated but are not fully investigated to date. The areas will be reclassified, as more RI data become available. Unevaluated areas for soil are generally sites that have not yet been investigated as part of a RI. Unevaluated areas for groundwater are generally areas downgradient of known sources of contamination or known groundwater contamination. As discussed above, there is a potential for groundwater contamination to be present virtually anywhere on the Base (as well as upgradient of the Base). The unevaluated areas (see Figures 13 and 14) are primarily downgradient of known or suspected significant sources. Detailed evaluation of potential ubiquitous sources of contamination will be performed as necessary within particular OUs and areas of concern but

not throughout the Base. The BMP will identify where further evaluation of groundwater contamination is necessary.

2.3 Off -Base Property

2.3.1 Off-Base Property

WPAFB is responsible for five properties located off the Base. Their location, size, and date of operation are summarized in Table 4. In FY95, WPAFB terminated all activities at the Blue Grass Army Depot and returned the property to the Army. However, also in FY95, WPAFB became responsible for an additional property near Holt, Michigan. Figure 15 shows their locations.

The 67-acre Cincinnati Defense Fuel Supply Point is located along the Ohio River immediately west of Cincinnati, Ohio. Fuel is offloaded from barges and stored in tanks before trucking to WPAFB and other defense installations. The facility is not the primary fuel supplier for WPAFB, and it functions only as a back-up supply. This facility was scheduled to close in FY96. Information on the environmental condition of property was not available for this MAP.

The Gentile Air Force Station (165 acres), also known as the Defense Electronic Supply Center (DESC) (its major tenant) was an Air Force supply depot for about 50 years. Although WPAFB is the leaseholder for the DESC, it is a separate entity from the Base and functions independently. Under BRAC, Gentile Air Force Station will be closed and the property transferred to the City of Kettering.

Potential environmental problems at the station include:

- Two landfills where construction rubble, waste oils, asbestos, and paint thinners were disposed of. TCE and vinyl chloride have been detected in groundwater near one of these landfills. Installation of a groundwater extraction well and air stripper were planned by DESC to remediate the groundwater.

- A reserve coal pile storage area (S-1) where waste oils, solvents, paint thinners, and battery acids were poured on the coal so that they would adsorb in the coal and subsequently be incinerated in the boiler.

- A second reserve coal pile (S-2).

- Two low-level radioactive sites (RD-1 and RD-2) where electron tubes were disposed of. Radiation levels were found by the U.S. Army Environmental Hygiene Agency to be negligible and no further action is planned at these sites.

- A buried hydrofluoric acid neutralization basin.

Gentile Air Force Station is a BRAC 95 installation consisting of 164 acres. All areas of potential environmental pollution, are undergoing/undergone soil, groundwater, sediment, surface water, and building material testing to determine the presence or absence of contamination. All areas of contamination will be remediated/have been remediated (groundwater, being remediated by extraction and treatment) before the properties are transferred to the City of Kettering. A property transfer to the City of Kettering was accomplished in June 1997 consisting of seventy-five acres (75) acres; November 1997, twenty (20) acres; and March 1998, seventeen (17) acres. The remaining remediation activities will continue with a projected date of July 1999 for transfer of the remaining 52 acres to the City of Kettering. The Deed transfer is projected for June 2001. The environmental clean up is projected to be completed January 2002.

All UST's but eleven have been removed. The eleven remaining USTs are scheduled for removal by FY98. All PCB transformers have been replaced. All friable asbestos will be encapsulated and a basewide asbestos survey/inventory will be completed during renovation.

The 92 acres Trebein Road property, also referred to as the Wright-Patterson Communications Flight-Test Annex and Laser Testing, is used as a communications facility about 4 miles southeast of WPAFB. An environmental assessment prepared by the WPAFB Office of Environmental Management to evaluate the potential use of the site, as cropland did not indicate the use or presence of hazardous substances at the site.

Wright-Patterson Communication Facility Annex No. 1 is an 8-acre radar facility within 1 mile of the Base's western boundary. The use of hazardous substances is not believed to have occurred at this site.

The Richmond Radar Bomb Scoring site is on the Blue Grass Army Depot in Richmond, Kentucky. The 2-acre site was "permitted out" to the Air Force. However in FY95, WPAFB terminated all activities at the site and returned the property to the Blue Grass Army Depot Installation Commander. WPAFB held the agreement even though the site was used exclusively by the Offutt Air Base in Nebraska. Hazardous wastes were used at this site.

The 15-acre Holt, Michigan, ground wave emergency network site is located in a cornfield in a rural setting. The site will be used in event of a nuclear attack. Communications would be

accomplished by underground means when airwave communications would not be possible. Information on the environmental condition of the property was not available for the MAP.

Newark Air Force Base OH was purchased in September 1996. Currently the Base is undergoing privatization with 73 acres sold and 10 acres remaining. This site was used for maintenance for missile guidance systems.

Kansas City, Missouri and Jefferson City, Tennessee was purchased in July 1998. Both sites are 11 acres and are used as groundwave emergency sites.

2.3.2 On-Base Tenants

Non-Air Force Tenants located on the Base who are using, managing, or potentially generating hazardous substances include the Navy Medical Research Institute, the Library of Congress offices, the Defense Reutilization/Marketing Office and the Defense Printing Service. The locations of these organizations are shown in Figures 16 and 17.

Chapter 3
Installation-wide Environmental Program Status

This chapter provides a summary of the status of current IRP and ongoing compliance activities at WPAFB. It also summarizes the status of community involvement to date.

3.1 Restoration Program Status

3.1.1 Summary of Regulatory Agreements

In February 1988, WPAFB and OEPA signed an OCO pursuant to Ohio Revised Code Sections 3734.13, 3734.20, and 6111.03.

Under the OCO WPAFB agreed to:

- Conduct PAs for 13 landfills (LFs), 5 fire training areas (FTAs), 6 coal storage piles (CSPs), 3 spill sites (SPs), 2 chemical burial sites (BSs), 2 USTs, and any other sites where wastes have been spilled, placed, or disposed of
- Conduct site investigations necessary to establish relative priorities for response

- Prepare comprehensive RI/FS work plans for all sites
- Conduct the RI/FSs
- Prepare work plans for and conduct RDs and RAs

Under Section 7, WPAFB and OEPA agreed to provide 30 days (or more if OEPA requests) for OEPA review and comment on submittals. In turn, WPAFB revision time is extended to as long as 60 days. WPAFB commits to reviewing and revising (if necessary) contractor's drafts before agency submittal. Under certain circumstances, OEPA would consider extending this period, but it requires notification that WPAFB needs more time within 10 days before the expiration of the 60-day revision time.

In March 1991, WPAFB and U.S. EPA Region 5 signed a FFA pursuant to the following authorities:

- CERCLA § 120
- Sections 6001, 3008(h), 3006, and 3004(u) and (v) of the Resource Conservation and Recovery Act (RCRA), as amended
- The Defense Environmental Restoration Program (DERP)

The FFA requires compliance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), CERCLA guidance and policy, RCRA guidance and policy, and applicable state law.

Under Section 6.3 of the FFA, the Air Force agreed to undertake, seek adequate funding for, fully implement, and report on the following tasks:

- OU RAs
- SI/RI/FSs
- Ongoing response actions including removal actions
- Operation and maintenance of response actions

Under Section 2.1 of the FFA, all parties agreed to the deadlines set forth in Section 12 of the agreement for draft primary RI, FS, Proposed Plan (PP), and Record of Decision (ROD) documents for 59 FFA sites and any new sites. Subsequent to the FFA and OCO, additional IRP sites were identified, resulting in the current list of 68 IRP sites. All parties subsequently agreed to adhere to any specified schedules.

The FFA provides specific due dates for submittal of primary documents for OU 1 (Landfills 8 and 10). These schedules were met. For the remainder of the OUs and Areas of Concern, the FFA provides deadlines as days elapsed from preceding final primary documents. It also provides for extensions of time when good cause exists. WPAFB has met either the required deadlines or deadlines established as a result of extensions granted.

3.1.2 Restoration Sites and Areas of Concern

Table 5 and Figures 3 and 4 summarize information on the sites currently identified. Out of the sixty-eight sites identified sixty-one have been designated "NA" (no action) RODs. Five sites have RODs for Long Term Monitoring. Declarations of these RODs are presented in Appendix D. The groundwater site under the BMP is slated for a ROD for Long Term Monitoring in September 1999. The last site is an Area of Concern that is still under investigation. WPAFB is pursuing delisting of sites from the National Priority List mid-spring 1999.

Investigation for Building 59, Area B (Area of Concern) was initiated in the fall 1998 and should be completed in fall of 1999. Burial Sites 5 & 6, Area B (Areas of Concern) SI Report was completed June 1998. A buried pipeline running through Burial Sites 5 & 6 will be trenched and disposed of in the spring of 1999. In addition to the ongoing investigations, WPAFB has completed removal actions to reduce or control contamination (see Table 6). Drums were removed from LFs 2, 7, 8, 11, and 12 and BS 4, and contaminated soil was removed from SPs 6 and 8. Groundwater in situ bioremediation was performed at FTA 5. A fence to control access was constructed at LF 9. Caps for LF 5, LF 8, and LF 10 were constructed in 1995. LF 11 was completed with a two-foot soil cover system in 1997. A biotreatment removal action for OU 8 was completed October 1997. Excavation of LF 12 was completed in November 1997. Soil cover systems were constructed at LFs 1, 2, 6, 7, 9, and were completed July 1998. Spill Site 11 (OU8) installation a french drain and sump pump for petroleum/water run-off was completed the fall of 1998. A Removal Action at the DRMO facility to eliminate potential exposure of PAHs contaminated soils was accomplished fall of 1998. Currently operating remedial systems include a groundwater collection and treatment system at LF 5 and a leachate collection system, and methane flare system at LFs 8 and 10. In 1999, a pilot-scale study of the In-Situ Oxidation will be utilized in to treat vinyl chloride in the groundwater east of Spill Site 11 (OU8) Bldg 92, Area B. The BMP continues to evaluate groundwater contamination.

3.2 Status of Community Involvement

Many community relations' activities were completed at WPAFB:

- Ohio CO and FFA Process. After preparation of the Ohio CO and the FFA, the documents were published for public comment.

- Administrative Record/Information Repository. The administrative record is on the fourth floor of the Wright State University library archives section in Fairborn and is maintained by the RPM. An index is available to identify documents by site. Coordination with the OEPA prior to closing the repository or administrative record will be done. These documents are held in the repository for a maximum of 60 days. A public information repository for recent documents and news releases was established at the Greene County library in the City of Fairborn.

- Community Relations Plan (CRP). The CRP prepared by the WPAFB Public Affairs Office was approved in 1989. An updated CRP is anticipated to be accomplished April 1999. CRP implementation is under the direction of the RPM. Public meetings are planned for each OU or Area of Concern as needed.

- Environmental Advisory Board. Under new DOD policy, the Technical Review Committee (TRC) was transitioned into RAB in December 1994. Since then, the Wright-Patterson Community Forum changed its name to the Environmental Advisory Board to allow for discussion of variety on environmental issues. The EAB is made up of community members and organizations with an interest in the success of Wright-Patterson's environmental program. Members of the EAB work with Base environmental managers to identify priorities, review plans and reports, and discuss key environmental issues that affect the environmental program and report activities of the EAB back to the community.

- Mailing List. The mailing list of about 3,000 interested parties maintained by the WPAFB Public Affairs Office is updated monthly.

- Newsletter. The *Environmental Messenger* newsletter provides periodic updates on environmental activities and is distributed to all parties on the mailing list. The newsletter generated quarterly covers all WPAFB environmental programs with particular emphasis on the IRP quarterly.

- Other Activities. Other community relations activities are planned on a proactive basis or as particular concerns arise. Examples include community interviews, the environmental seminar held for media, environmental videos, fact sheets, and public information booths at community events, informational public meetings at key points during the RI/FS and RD/RA processes.

Chapter 4
Installation-wide Strategy for Environmental Restoration

This chapter summarizes the installation-wide environmental restoration strategy for WPAFB.

4.1 Restoration Program Strategy

4.1.1 OU Designation and Strategy

4.1.1.1 OU Designations

In response to Air Force restoration goals, all known WPAFB sites requiring further action were grouped into 11 OUs by geographic location. In 1993 OU-12 was integrated with OU-9. Where further subdivision of the WPAFB OUs is necessary, the specific media being addressed will follow the OU number. For example, OU-1 included a source control action referred to as the OU-1 source control operable unit.

The composition of each OU is summarized below, listed in Table 7, and shown in Figures 3 and 4.

OU-1—Located along the eastern border of Area B in the Woodland Hills housing area. Comprises IRP sites LFs 8 and 10.

OU-2—Located along the northeastern boundary of Area C. Comprises IRP sites SPs 2, 3, and 10, BS 1, Long-term Coal Storage Area, Temporary CSP, Coal and Chemical Storage Area, and Coal Storage Area (Building 89).

OU-3—Located along the central area of the northwestern boundary of Area C. Comprises IRP sites LFs 11, 12, and 14; FTAs 2, 3, 4, and 5; Earth Fill Disposal Zones (EFDZs) 11 and 12; and SP 1.

OU-4—Located along the southeastern boundary of the installation in Areas A and C. Comprises IRP sites LFs 3, 4, 6, and 7 and HP2 (coal storage) and HP2 Mercury Addendum.

OU-5—Located along the western boundary of Area C. Comprises IRP sites LF 5, FTA 1, BS 4, and Gravel Lakes Tank Site.

OU-6—Located along the southwestern boundary of Area B. Comprises IRP sites LFs 1 and 2 and EFDZ 1.

OU-7—Located along the northeastern boundary of Area C. Comprises IRP site LF 9 (pits A, B and C).

OU-8—Located in the north-central portion of Area B. Comprises IRP sites SPs 5, 6, 7, 9 and 11; SWMU 6-B, and UST Building 71A.

OU-9—Located in the south-central and northern portion of Area B. Comprises IRP sites EFDZs 2, 3, 4, 5, 6, 7, 8, 9, and 10; BS 3; HP 5, DRMO; and SWMU 8.

OU-10—Located along the southeastern boundary of Area C. Comprises IRP sites LF 13, Central Heating Plant 3, SP 4; Tank Farm 49A; and UST Building 119.

OU-11—Located along the northwestern boundary of Area C. Comprises IRP sites BS 2, UST Building 4020, and the Chemical Disposal Area.

4.1.1.2 Response Strategy

In October 1991 WPAFB ranked the original 11 IRP OUs in coordination with the U.S. EPA and OEPA in order of priority. In 1993 and 1995 the ranking was revised. The criteria for ranking the OUs were the degree of perceived threat to public health and the environment and the immediacy of the perceived threat.

4.1.1.2.1 Basewide Monitoring Program. In 1994 the WPAFB project team established the groundwater operable unit concept under the BMP to address groundwater on a "regional" scale. The groundwater area to be addressed includes:

- Horizontal dimensions limited to the confines of WPAFB with the exception of the known offsite plume from OU-5 or other base plumes found to be migrating off-base
- Vertical dimensions limited to the Mad River Valley Alluvial Sole Source Aquifer (Groundwater within the bedrock is not included since it does represent a viable mechanism for contaminant transport.)
- Surface water within the geographic area of the BMP

The definition does not include unsaturated soils. These will continue to be addressed within the 11 OUs that are now converted to source area OUs or Areas of Concern. Heavily contaminated groundwater below or close to the IRP sites can still be considered within the

definition of source control and remediated within the source area. The BMP is focusing on the larger or less concentrated groundwater contaminant plumes rather than the plumes near the source areas.

The BMP was defined to meet the following objectives:

- Address the commingling of contaminant plumes from different OUs or Areas of Concern
- Integrate groundwater remediation approaches to provide for cost-effective remedies
- Accelerate source control remedies by separating the more complex groundwater issues

4.1.1.2.2 Streamlined RI/FS Process. The WPAFB project team developed a streamlined RI/FS process to speed remediation and incorporate the goals of the Superfund Accelerated Cleanup Model (SACM). A "tiered" approach to performing risk assessment and remedy evaluation and remediation will be followed for the 11 source OUs, Areas of Concern, (Figure 18) and the BMP.

The first tier identifies sites that are clearly threats to public health or the environment and require early action. For sites potentially in this class, a semi-quantitative risk assessment is performed based on at least one round of available RI data to identify whether the sites have contaminants at concentrations that exceed a carcinogenic risk of 10^{-4}, a hazard index of 1, or that could leach to groundwater and cause exceedance of potential groundwater Preliminary Remediation Goals (PRGs). Screening criteria are risk-based PRGs calculated for each chemical of potential concern or the U.S. EPA's *Draft Soil Screening Level Guidance* (September 1993). Sites where chemical concentrations exceed the criteria are considered for early removal actions. If the sites are in areas of potential ecological concern, a qualitative ecological risk screening will be applied.

The second tier identifies sites that are clearly not threats to the public health or the environment and can be proposed for "No Further Action." For sites potentially in this class, the semi-quantitative risk assessment is again performed as discussed above. The screening criteria for judging the sites in this class are a carcinogenic risk of less than 10^{-6}, a hazard index less than 1, and concentrations below the Draft U.S. EPA soil screening levels.

Sites falling between the two tiers (i.e., carcinogenic risk less than 10^{-4} but greater than 10^{-6} or borderline relative to the soil screening levels for aquifer protection) proceed with the traditional quantitative risk assessment, feasibility study approach.

The final tier of the risk assessment is the Basewide Current Conditions Human Health Risk Assessment (May-97) and Future Conditions Human Health Risk Assessment (Feb-98) for groundwater. This risk assessment was performed following completion of all remedial or removal actions to assess the residual risk associated with contamination remaining at WPAFB.

4.1.1.2.3 Non-Time Critical Removal Actions. The non-time critical removal actions focus on source control or source removal, and are anticipated primarily at landfills and spill sites. The need for non-time critical removal actions will be determined during the OU RI or SI following one round of sampling.

If source control removal actions are warranted at one or more sites, the following process will be undertaken:

- Summarize SI/RI data to date and prepare the site-specific, semi-quantitative risk assessments for the source control/source removal sites.
- Prepare site-specific engineering evaluation/cost analysis (EE/CA) or site-specific removal action plans for source control/source removal alternatives. Incorporate the "Basewide Removal Action Plan" and U.S. EPA "Presumptive Remedies" as appropriate.
- Following a 30-day public comment period, an Action Memorandum will be issued documenting the results of the EE/CA.
- Based on the Action Memorandum, design and construction activities will be executed for the source control/source removal actions.

During this process the SI/RI continues with the remainder of sampling and analysis tasks. The SI/RI report will be finalized based on two or three rounds of data, depending on analytical results. If all sites within the OU have not been addressed with presumptive remedies or "No Further Action/No Action", an FS or EECA will be performed for the remaining sites.

By addressing source control/source removal actions early, it is hoped that the public health and environment will be protected and that natural groundwater attenuation will become a more viable alternative during remedy selection for groundwater contamination.

4.1.1.2.4 Remedial Actions. For those OUs requiring a quantitative baseline risk assessment and FS, a final OU ROD will be developed for the remediation of the OU. Because source control/source removal actions may already have been implemented during the SI/RI/FS for

specific sites, the remedial actions will focus primarily on remaining contamination; however, additional source control/source removal actions may be implemented as a result of findings from the final SI/RI/FS.

4.1.1.2.5 Response Summary. The WPAFB environmental response actions includes:

- Source control OUs at LFs 6 and 7 (OU4), SP 5, and SP11 (OU8), LFs 1 and 2 (OU6), LFs11and 12 (OU3), LF9 (OU7), DRMO, and Munitions Burial Site were actions that were completed in a relatively short time in 1997. Because groundwater contamination is at or below action levels and there are no immediate threats to public health and the environment, the need for groundwater remediation would be dependent on the effectiveness of the source control action in reducing groundwater contamination. This strategy is based on SACM.

- Use of the BMP to evaluate basewide groundwater contamination, distribution, contaminate fate and transport and risks to public health and the environment.

- The concepts of the U.S. EPA Guidance for Conducting RI/FSs at Municipal Landfill Sites as well as the U.S. EPA 30-Day Study for IRP landfill and EFDZ Sites. The important concepts are that (1) characterization of landfill contents should only be performed when "hot spots" of contamination representing a principal threat because the contaminants mobility or toxicity are known or suspected (based on site history, non-intrusive survey results, or RI data suggestive of hot spots), and (2) the presumption is the landfill will be capped and "hot spots" will be removed or treated if necessary.

- Bioslurping for the unsaturated soils and groundwater at OU8 to expedite groundwater remediation was accomplished and can be utilized at other SPs, FTAs, UST, and DOD locations.

The environmental response strategy outlined by OU is summarized in Figure 19 along with the associated primary documents.

4.1.2 OU Response Actions

4.1.2.1 Past or Current Actions

WPAFB uses media-specific OUs as subdivisions under the more broadly defined OUs 1 to 11. Because experience at WPAFB has shown remediation proceeds more quickly under removal actions, media-specific OU remedial actions will be used on a more limited basis. Opportunities for more rapid action will be sought through removal actions directed at

specific media. According to the NCP (300.415(b)), removal actions can be a variety of remedial technologies including capping or removal of contaminated soils.

The following media-specific OU or Area of Concern remedial actions or removal actions were developed for the IRP sites:

- **OU-1**—Source control OU remedial action (RCRA subtitle D cap, leachate collection and treatment, and gas control) for LFs 8 and 10.
- **OU-1**—Offsite groundwater OU for LFs 8 and 10 for water supplies and subsequent removal action providing public water supply.
- **OU-2**—Removal action of recovery of free product for SPs2 and 3. The free product recovery system burnt down in 1995. The system was re-evaluated and a natural attenuation remedial action was selected in the FS for Spill Sites 2, 3, and 10.
- **OU–3**—Source control removal action for LF 11 (capping).
- **OU-3** ---Source control removal action for LF 12 (excavation and disposal)
- **OU–4**—Removal action for LFs 6 and 7 (cap upgrades) and methane monitoring for LFs 3, 4, 6 and 7.
- **OU-5**—Source control OU removal actions consisting of capping for LF 5 and groundwater extraction and treatment.
- **OU–6**—Removal action for LFs 1 and 2 (cap upgrades, drainage improvement).
- **OU-7**—Source control removal action for LF 9. Cap upgrade for Pit C and fencing for Pits A and B.
- **OU-8**—Source control removal action for contaminated soils and LNAPL at SP 5 and for contaminated soils at SP 11.
- **OU-10**—Groundwater monitoring under the BMP.
- **BMP**—Long-term groundwater monitoring.
- Various OUs—Drum removal LFs 2, 7, 8, 11, and 12, and BS 4.
- Various OUs—Removal of PCB contaminated soil at SP 6 and 8.

4.1.3 Potential Removal Actions and Treatability Studies

Potential remedial or removal actions are tentatively identified (Table 8). At this time, these actions are preliminary and OEPA and U.S. EPA involvement will be actively sought during further consideration of the actions. Where removal actions are proposed and agreed to by the U.S. EPA and OEPA, opportunities will be made for public review of the Proposed Plans.

- Pilot-scale study of In-situ Oxidation
- OU5 Groundwater Treatability Study

Media-specific remedial actions or removal actions in addition to those listed above may be developed based on the SI/RI results. Development of additional sites will depend on the risk to public health and the environment, ARARs, and the ability to expedite remediation, especially in controlling contaminant migration.

4.1.4 Community Involvement Strategy

The following strategy was adopted to support a proactive community relations program at WPAFB:

- Evaluate the need to update the CRP at a minimum interval of 6 months. Removal and remedial actions accomplished between updates will be incorporated into the CRP as appendixes.
- Update and maintain the information repository at the Greene County library and the Administrative Record at Wright State University when new documents are finalized and issued.
- Maintain an administrative record index for each response action.
- Develop Proposed Plans in fact sheet format and issue public notices in advance of public comment periods.
- Hold 30-day public comment periods on the PPs for each OU or Area of Concern and respond to all comments in a responsiveness summary; all commentors will be sent a copy of the responsiveness summary.
- Hold informal and formal public meetings as needed for each OU and Area of Concern.
- Update the mailing list on a monthly basis.

- Update the mailing list on a monthly basis.
- Continue to hold EAB meetings on a quarterly basis.
- Provide an opportunity for public comment on removal actions. For time-critical removal actions opportunities for public comment will be afforded in accordance with 40 CFR 300.820(b).
- Continue to publish the *Environmental Messenger* newsletter on a quarterly basis

4.1.5 Remedy Selection Approach

Remedies will be selected in accordance with statutory and NCP criteria. The WPAFB project team will involve all parties who will be affected by the remedies selected at the installation in the evaluation of the implementability of potential remedies. Particular attention will be given to the following during the evaluation of alternatives:

- **Program Expectations**. The U.S. EPA's program expectations listed in the NCP (Section 300.430(a)(iii)) will be considered in remedy selection. These expectations are (1) use of treatment to address principal threats such as areas of liquids or areas contaminated with high concentrations of toxic or mobile compounds, (2) use of containment for wastes posing a relatively low long-term threat and where treatment is impracticable, (3) use of institutional controls where active measures are not practicable based on the balancing of trade-offs during the remedy selection process, (4) use of innovative technology, and (5) return of usable groundwater to its beneficial use where practicable.
- **ARARs**. ARARs and criteria "to be considered" (TBCs) for anticipated remedial alternatives likely to effect the development and selection of remedial alternatives will be identified by the project team. ARARs already developed (e.g., OU1 landfill ARARs) will be used as appropriate.
- **ARAR Waivers**. ARARs may be waived (NCP Section 300.430(f)(ii)(c)) under six circumstances. The third waiver is "compliance with the requirement is technically impracticable from an engineering perspective." This waiver will be considered in evaluating the effectiveness of alternatives in reducing concentrations of contaminants to chemical-specific ARARs and/or remediation levels. In particular, the EPA study *Evaluation of Groundwater Extraction Remedies*" and the subsequent policy directive *Considerations in Groundwater Remediation at Superfund Sites* (OSWER Directive 9355.4-03) shall be

considered when evaluating the effectiveness of groundwater extraction to achieve contaminant reduction.

- **Land Use/Risk Assessment.** Risk assessment future exposure scenarios will incorporate anticipated future land use. Because it is very unlikely that WPAFB will close in the foreseeable future, land uses at the installation are expected to continue to be under the control of WPAFB. As a result, it is anticipated that future exposure scenarios for some sites (e.g., LFs, FTAs) may be limited to trespass and occupational exposures. Residential future land use will be designated in applicable areas.

- **Groundwater Protection Strategy.** The aquifer at WPAFB is a designated sole source aquifer. The U.S. EPA Groundwater Protection Strategy will be considered in developing groundwater remedial responses at WPAFB.

- **Alternate Concentration Limits (ACLs).** ACLs will be considered during the FS as groundwater protection standards for onsite plumes where (1) active restoration to MCLs or non-zero MCLs is not practicable, (2) the discharge area of the plume is known, (3) on the basis of measurements or projections there are no statistically significant increases of contaminant concentrations from the groundwater in the surface waters, and (4) the remedial action includes enforceable measures that will preclude human exposure to the contaminated groundwater (CERCLA Section 121(d)(2)(B)(ii)).

- **Soil Cleanup Goals**—OSWER directive 9355.0-30 establishing the presumption that soil will be remediated to the 1×10^{-4} excess lifetime cancer risk will be considered in setting soil cleanup goals.

- **Treatability Studies.** Treatability studies will be performed during the RI/FS process or incorporated into the ROD as a foundation for performance-based remedial actions. Treatability studies will be used to develop design criteria, sizing, and operation and maintenance requirements.

- **Applicable Remedies.** For LF and EFDZ sites, the concepts of the *U.S. EPA Guidance for Conducting RI/FSs at Municipal Landfill Sites* as well as the U.S. EPA 30-Day Study for the WPAFB IRP will be followed.

- **Petroleum Contamination Remedies.** Recovery of free product will be attempted when encountered.

Soil contaminated with petroleum-based fuels, oils, and lubricants will be remediated in situ where sufficient volume is present to make this a cost-effective alternative. Evaluation of natural attenuation processes including bio-degradation, volatilization, and transport to the groundwater will be performed to assess the viability of these natural processes to remediate the contaminated soil. A bioventing alternative, where air is injected at low airflow rates to promote biological degradation, will be considered at all sites where it is potentially cost-effective and technically feasible. Other in situ technologies such as soil vapor extraction, bioslurping, and biofilter treatment of air emissions will also be considered if necessary to protect public health and the environment. Treatability studies designed to evaluate natural attenuation and bioventing will be performed as part of an early removal action and results will be used for evaluations of these alternatives at subsequent spill and fire training sites.

In situ treatment alternatives for groundwater contaminated with dissolved BTEX contaminants as well as chlorinated VOCs will also be given a high priority for evaluation. Natural attenuation will be evaluated where immediate risks to human health or the environment are not present. Air sparging and in situ biodegradation of BTEX groundwater contamination will also be evaluated, particularly for remediation of hot spots of contamination where these technologies are potentially cost-effective and technically feasible. Extraction and treatment will also be considered at the majority of sites.

The WPAFB EM RPM will hold project team meetings early in the FS process to discuss conceptual remedies with the U.S. EPA and OEPA.

Chapter 5
Environmental Program Master Schedules

This chapter presents the WPAFB Master Schedule of activities in the environmental restoration and compliance programs. The Master Schedule is reviewed annually and updated as necessary to reflect revisions to the schedules. Appendix C, Figure 21 presents the summarized Master Schedule. Compliance activities are summarized in Figure 22.

Project team meetings are held as necessary throughout the course of the SI/RI/FS to discuss such topics as:

- ARARs
- Identification of Removal Actions
- Remedial Action Strategies
- Background Characterization
- Data Gaps

5.1 Environmental Restoration Schedule

WPAFB's ability to meet the schedule shown in Appendix C, Figure 21 is dependent on the ability to adequately characterize the sources and contaminant migration pathways of concern. Also, to obtain the data necessary to develop and design the remedial actions in the OUs in essentially one planned investigation effort for each OU or Area of Concern. As a result, close support laboratory analysis and preliminary project team concurrence as to the adequate delineation of contaminant extent is critical to meeting the IRP Master Schedule. If additional phases of fieldwork, such as the installation of additional monitoring wells, become necessary, the Master Schedule will be expanded.

Historically at hazardous waste sites throughout the country, predesign field investigations have been necessary to obtain more detailed data for design of the selected remedy (e.g., more accurate delineation of groundwater capture zones, thickness and extent of landfill cover, vertical and horizontal extent of contaminated soil, treatment analytical parameters, etc.). The Master Schedule allows for a focused field effort (about 3 months' duration) to obtain a limited amount of additional data as part of predesign efforts. OU schedules do not allow for a more typical field investigation effort that lasts a year or more with additional review cycles. As a result, it will be critical during the FSP/SSWP development to anticipate likely remedial actions and plan for obtaining necessary data for remedial design as part of the SI/RI.

Funding requirements for the IRP were tentatively projected through construction of all projected remedial actions. The funding amounts or levels do not have a definable accuracy range because of the many uncertainties associated with the estimates. The costs should be considered "current best guesses" based on the limited available information. The following assumptions were used in the development of these estimates:

- Likely remedial alternatives were identified for each IRP site based on site information and professional experience and judgment.
- Remedial design costs are based on past contractor experience for similar sites.
- Remedial construction costs were estimated using the computer program ENVEST if site specific estimates were not available.
- RI/FS, design, and construction costs are summarized by fiscal year according to the IRP Master Schedule.

IRP costs are presented in Appendix A, Table A-1.

Chapter 6
Technical and Other Issues to be Resolved

6.1 Data Quality

6.1.1 Action Item

- Continue implementing the existing QAPP to establish the usefulness of data collected during current and future project phases. This will be accomplished by continuing to implement and reformulate data quality management procedures.

6.1.2 Rationale

The historic and future analytical data contribute to the completion of site characterizations, risk assessments, and remedial alternatives development by filling data needs. In addition to DQO Levels 4 and 5 analyses, DQO Levels 1 and 2 screening and 3 non-CLP offsite laboratory analysis data will be critical to sufficiently defining the scope of remedial alternatives to proceed with design and maintaining the IRP Master Schedule.

6.1.3 Status/Strategy

Analytical data collected subsequent to Phase 2 Stage 1 are considered usable for all purposes. During the development of FSPs for the SI/RI/FSs, contractors will review the historical data summary tables for accuracy in reporting of contaminant concentration units, inconsistencies in sample location designations, or numbering and overall consistency with the preliminary site conceptual model. Suspected inaccuracies will be investigated further if necessary by checking field notes, laboratory analytical data sheets, or project files. Historic data will be reviewed to ensure compliance with QA/QC requirements specified in the QAPP.

For current and future field efforts, WPAFB will continue to follow the structured data collection and documentation process (including electronic data formats) in the IRP Information Management System (ERPIMS) Data Loading Handbook and the Environmental Management Information System (EMIS). The WPAFB RPM, WPAFB QA/QC, along with representation from the RI/FS contractor representative, will be responsible for continuing the implementation of field and laboratory audit processes so that project compliance assessment, project quality management, and problem solving through the use of corrective actions occurs.

The use of close support laboratories and field screening techniques will be emphasized throughout the remaining SI/RI/FSs and any new areas of concern. DQOs associated with these activities will be clearly defined and agreed to by project team members before their use at WPAFB.

During work plan preparation for subsequent sites, more significant use of DQO Level 3 analysis will be considered. DQO Level 3 can provide similar detection levels and quality as CLP DQO Level 4 analysis but will not have a similar level of QA/QC documentation.

6.2 Data Integration and Management

6.2.1 Action Items

- Improve access to and management of environmental restoration data generated at WPAFB. Use EMIS and Geographic Information System (GIS) technologies to identify ANSCs, classify remaining areas on the installation as to their site characterization status, and assess data gaps.
- Maintain the existing central clearinghouse for data and complete uploading of data to EMIS and ERPIMS.
- Require all contractors conducting SI/RI/FSs, RDs, and construction activities to submit data to the clearinghouse in electronic format. The data will be entered into EMIS and then transferred to ERPIMS.
- Use the clearinghouse to distribute quality-assured data in standard formats to parties with the need for a basewide perspective on activities at WPAFB, including contractors, Air Force decisionmakers, and regulators.
- Improve the spatial data analysis capabilities at WPAFB so that the project team can achieve quick turnaround evaluation of close support laboratory data while investigatory teams are in the field. This will minimize the schedules and reduce remobilization costs.

6.2.2 Rationale

There are currently several IRP and environmental management contractors, as well as the U.S. EPA and OEPA, that are involved in the IRP. It is important that all parties have easy access to data for decision making. The maintenance of the EMIS database is the most efficient method for data sharing and evaluation.

6.2.3 Status/Strategy

The status of historical data entered into EMIS and ERPIMS is shown in Appendix B, Table B-1. Project deliverables are listed in Table B-2. The list is organized by site in Table B-3. Table B-4 correlates WIMS-ES site identifications to the ERPIMS site identification.

An additional activity in progress is the development of a GIS system for environmental data.

6.3 Conceptual Models and Data Gaps

6.3.1 Action Item

Continue to identify data gaps while monitoring groundwater under the Base Wide Groundwater Monitoring Program. Areas of concern, will be investigated when /if discovered.

6.3.2 Rationale

Effective identification of plume changes and filling of data gaps will allow evaluation of long-term monitoring schemes for ROD reviews.

6.3.3 Status/Strategy

Project team meetings will be used to resolve long-term monitoring issues in preparation for ROD reviews.

6.4 Background Levels

There are currently no "Action Items" under this heading. Background levels are determined individually for each OU. The background levels for groundwater basewide were determined under the BMP.

6.5 Risk Assessments, Protocols, Future Land Use, and Cleanup Standards

6.5.1 Action Item

- Ensure that appropriate development of land use scenarios and exposure assumptions are used for risk assessments. Use semiquantitative risk assessments where possible.

6.5.2 Rationale

The risk assessment process requires the evaluation of existing and potential land uses considered at the site. Because WPAFB will likely remain a major component of the Air Force well into the future, land uses are unlikely to change significantly at the Base. However, it is important to promote those proper exposure assumptions and scenarios are developed.

6.5.3 Status/Strategy

Contractors, in conjunction with project teams, will use Section 9.4 of the RI/FS Project Work Plan to develop a risk assessment strategy.

6.6 Relative Risk Evaluation

6.6.1 Action Items

- Use the Relative Risk Evaluation process to assist in prioritization of work to be performed, and funds allocation.

- Use the Relative Risk Evaluation process to measure progress in meeting risk reduction goals as established by HQ AFMC, USAF, and DOD.

6.6.2 Rationale

Because of the continuing decrease in funding for environmental restoration, prudent prioritization of projects at the Base level and throughout DOD has become a critical aspect of program management. The purpose of the Relative Risk Evaluation process is to ensure that the limited funds available are spent on sites that pose the greatest risk.

6.6.3 Status/Strategy

The baseline Relative Risk Evaluation was completed and resulted in thirteen sites classified as "high" risk, eight sites classified as "medium" risk, and nine sites classified as "low" risk. Two sites were not evaluated because of insufficient data. The thirty-two sites are distributed across the eleven operable units. Future projects will be undertaken to achieve the greatest possible risk reductions. Risk reduction will be measured by using "metrics" established by HQ AFMC, USAF, and DOD. There are currently seven "high" risk site, seven "medium" risk sites and nine "low" risk sites. Seven of the sites moved to response complete status following a no further action Record of Decision in September of 1996. A summary of current relative risk rankings is provided in table 5.

6.7 Contracting Strategy

There are currently no action items under this heading. WPAFB operational contracting will continue to directly acquire and manage contracts in support of the IRP.

Reference List

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CHAPTERS 1 - 6

FIGURES

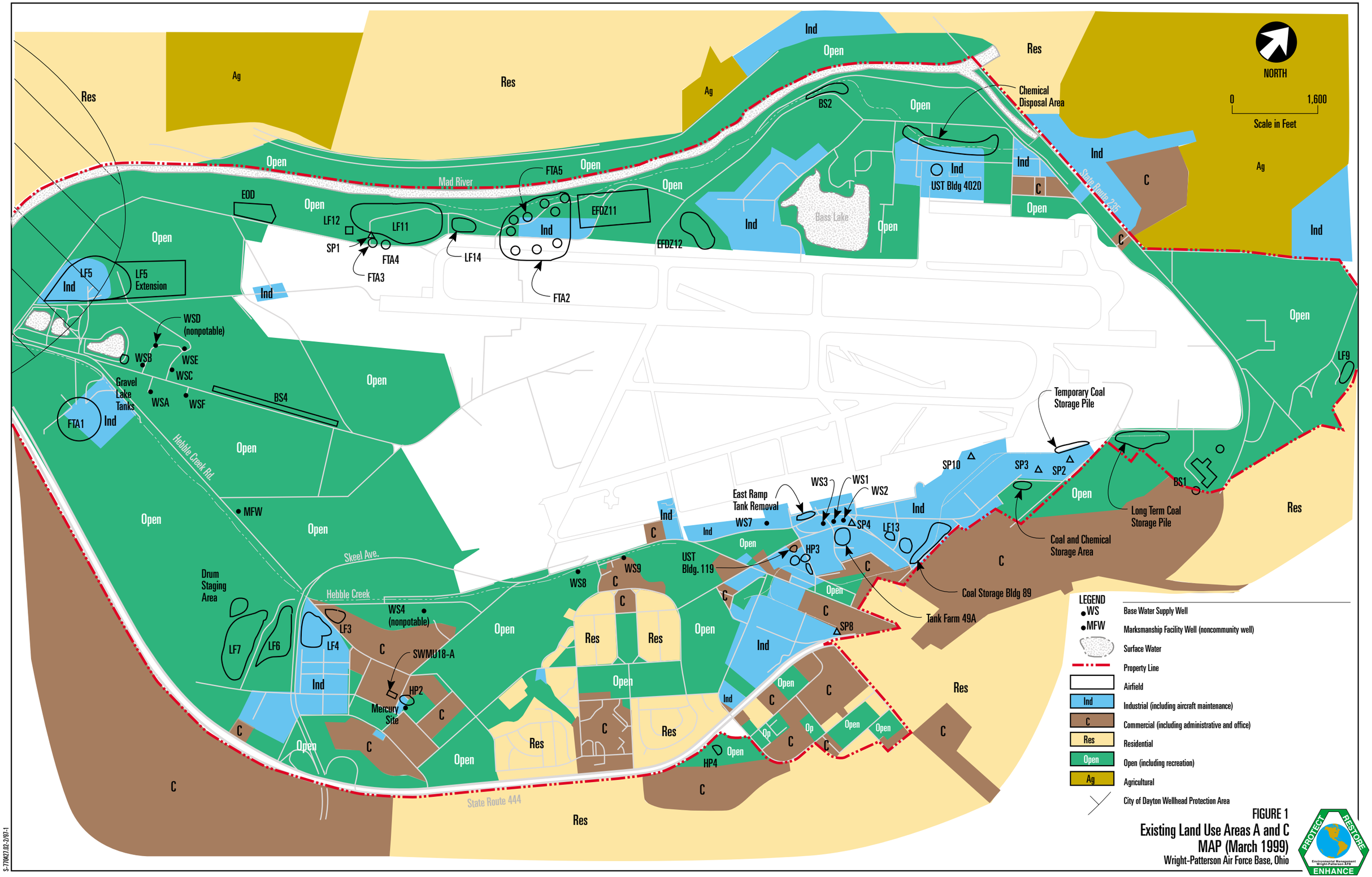


FIGURE 1
Existing Land Use Areas A and C MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management Wright-Patterson AFB

S-770427.02-2/97-1

NORTH

0 1,600

Scale in Feet

AREAS A and C

Dayton Well Field Partner's Island

Wright Field

Huffman Dam

Mad River

Hebble Creek

State Route 444

Skyline Dr.

Airway Rd.

Lagoon Rd.

Kauffman Ave.

Ind
Res
C
Open
Ag
WS1
WS2A
WS2B
WS4
WS5
SP5
SP6
SP7
SP9
SP11
HP1
HP5
Bldg 59
UST 71A
SWMU-8B
SWMU-6B
DRMO
BS5
BS3/BS6
EFDZ1
EFDZ2
EFDZ3
EFDZ4
EFDZ6
EFDZ7
EFDZ8
EFDZ9
EFDZ10
EFDZ25
LF1
LF2
LF8
LF10

LEGEND

- WS — Base Water Supply Well
- Surface Water
- Property Line
- Airfield
- Ind — Industrial (including aircraft maintenance)
- C — Commercial (including administrative and office)
- Res — Residential
- Open — Open (including recreation)
- Ag — Agricultural
- City of Dayton Wellhead Protection Area

S-770427.02-2/97-2

FIGURE 2

Existing Land Use – Area B

MAP (March 1999)

Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management
Wright-Patterson AFB

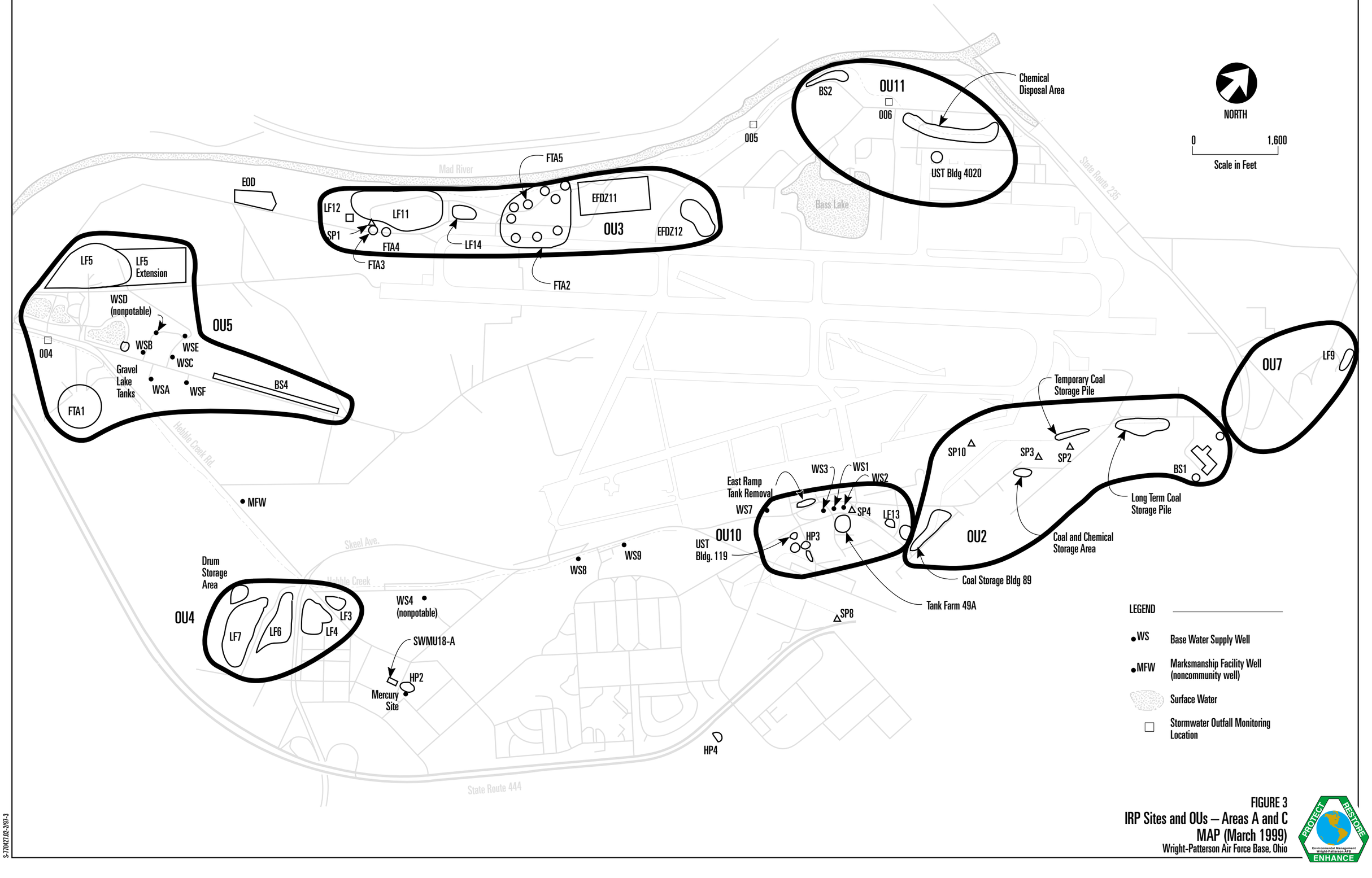
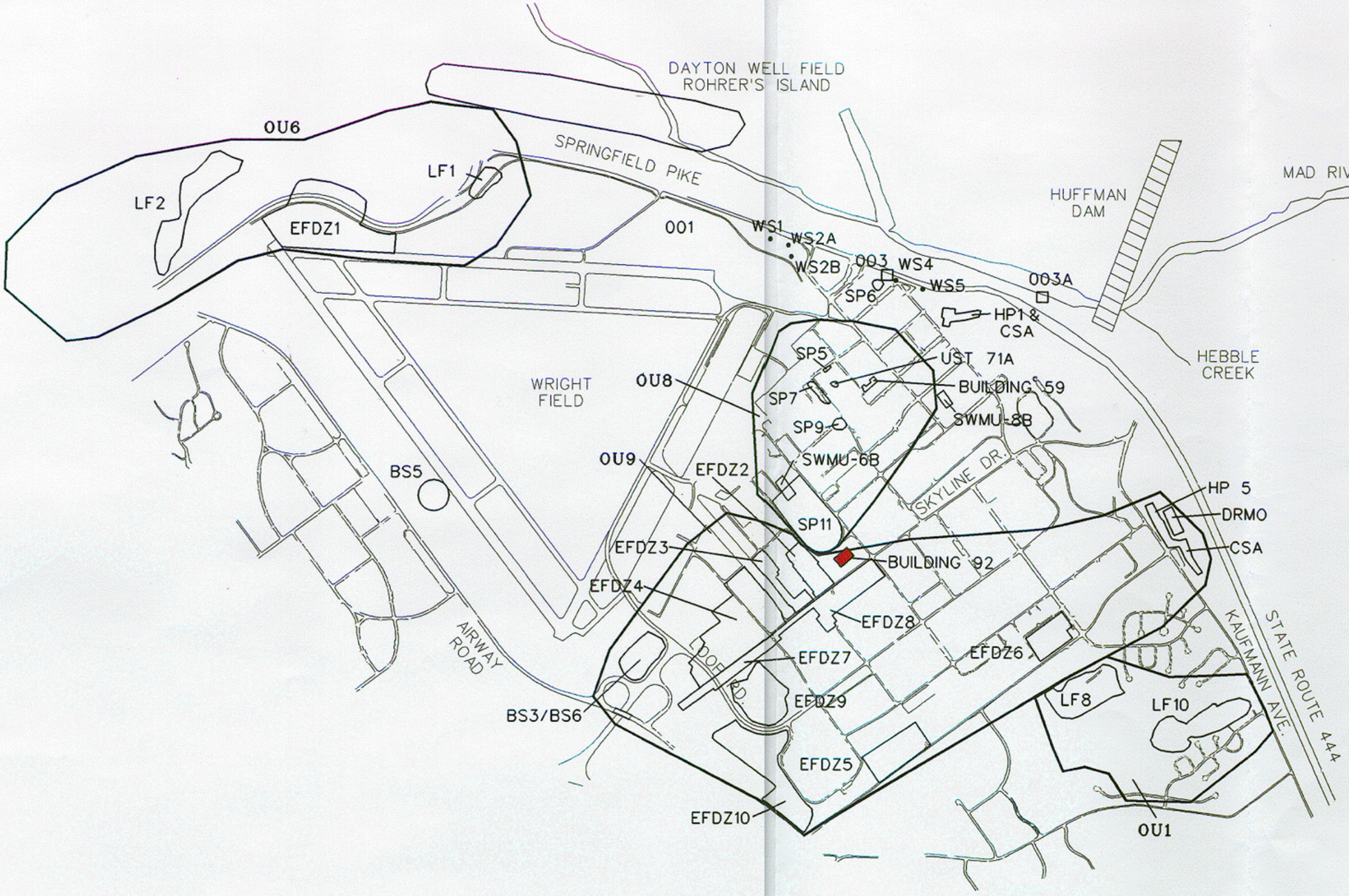


FIGURE 3
IRP Sites and OUs – Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

S-770427.02-2/97-3



LEGEND

•WS Base Water Supply Well

□ Stormwater Outfall Monitoring Location

FIGURE 4
IRP Sites and OUs - Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

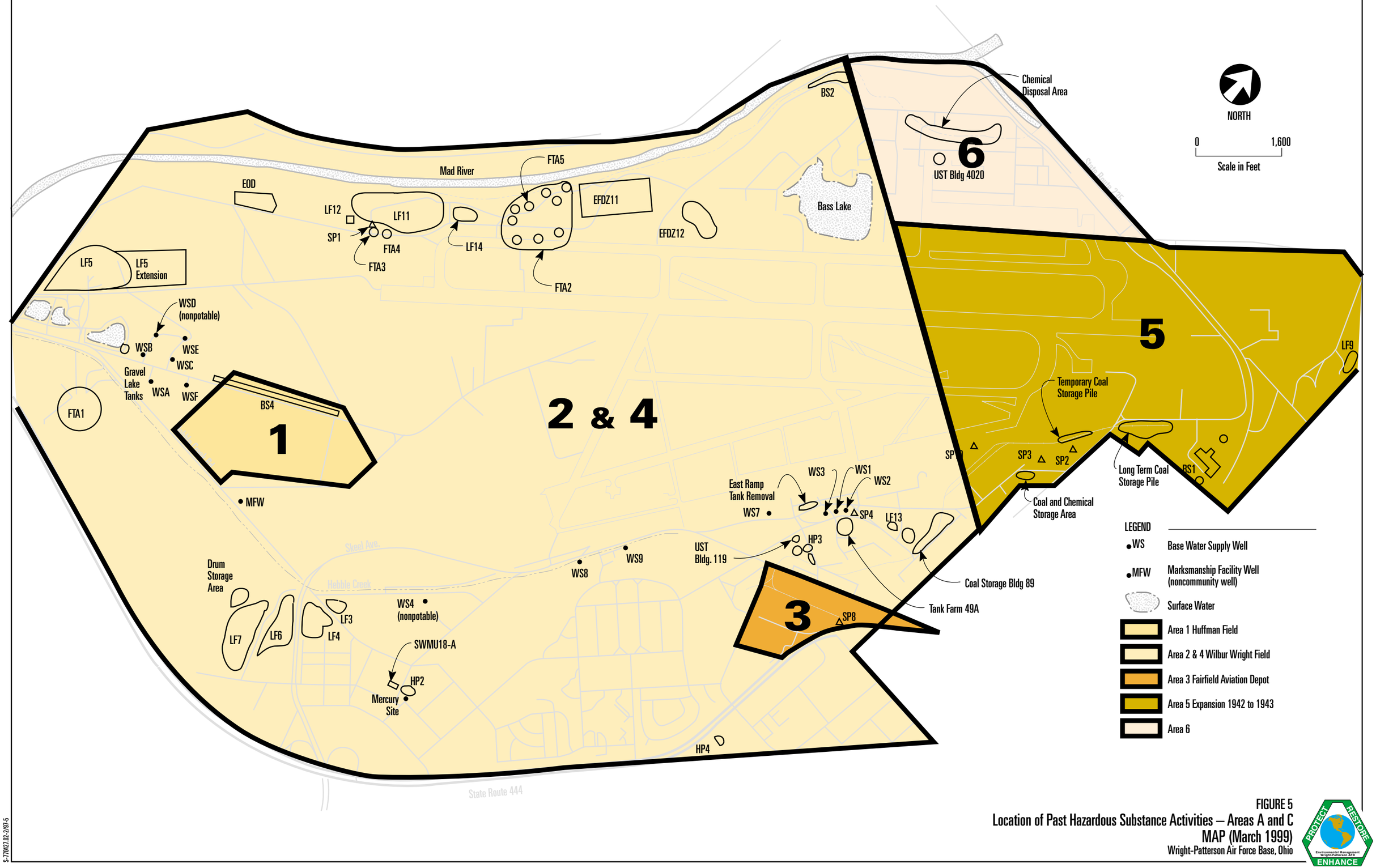
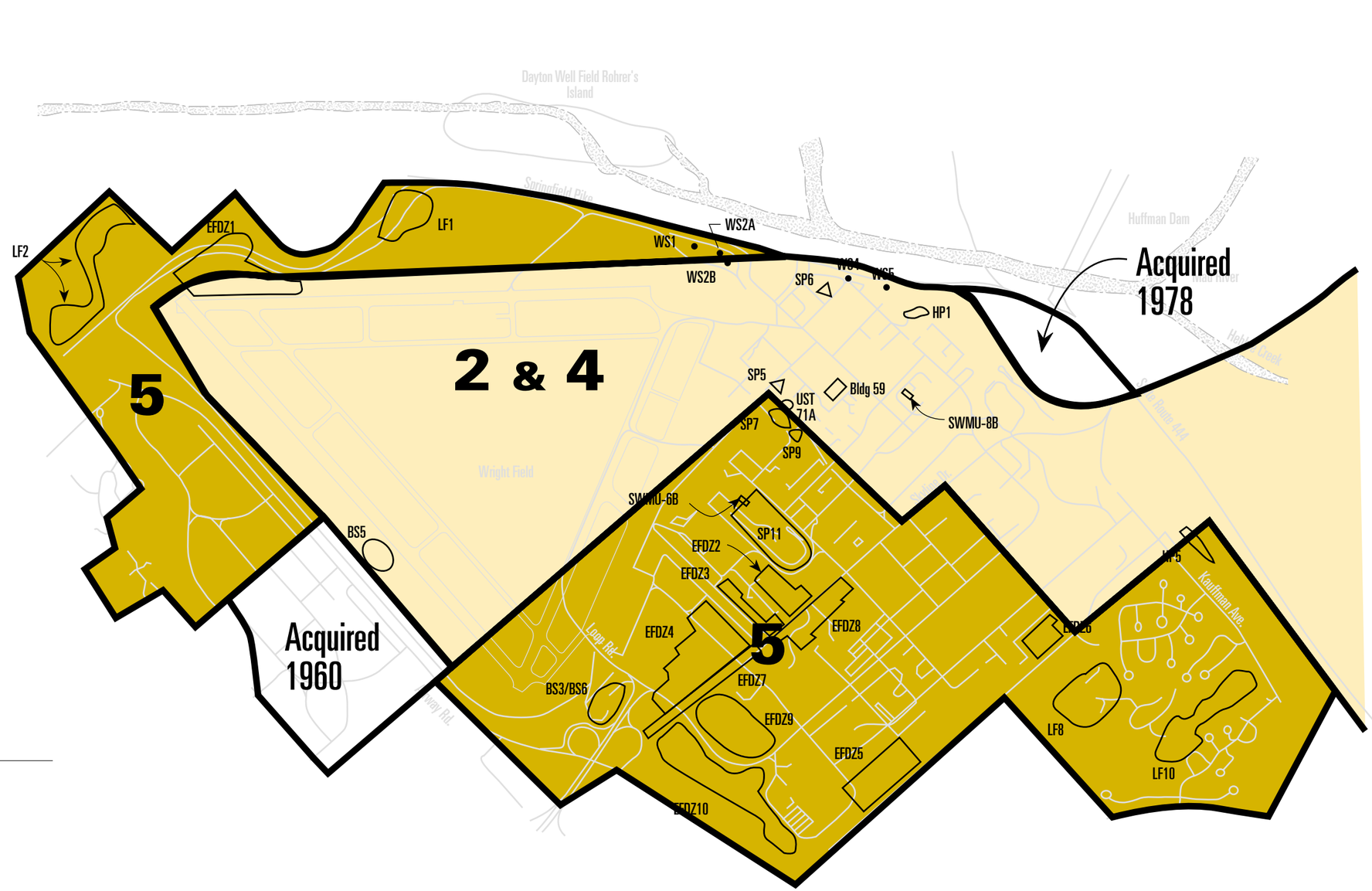


FIGURE 5
Location of Past Hazardous Substance Activities – Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

S-77DM27.02-2/97-5



LEGEND

WS Base Water Supply Well

Surface Water

Area 1 Huffman Field

Area 2 & 4 Wilbur Wright Field

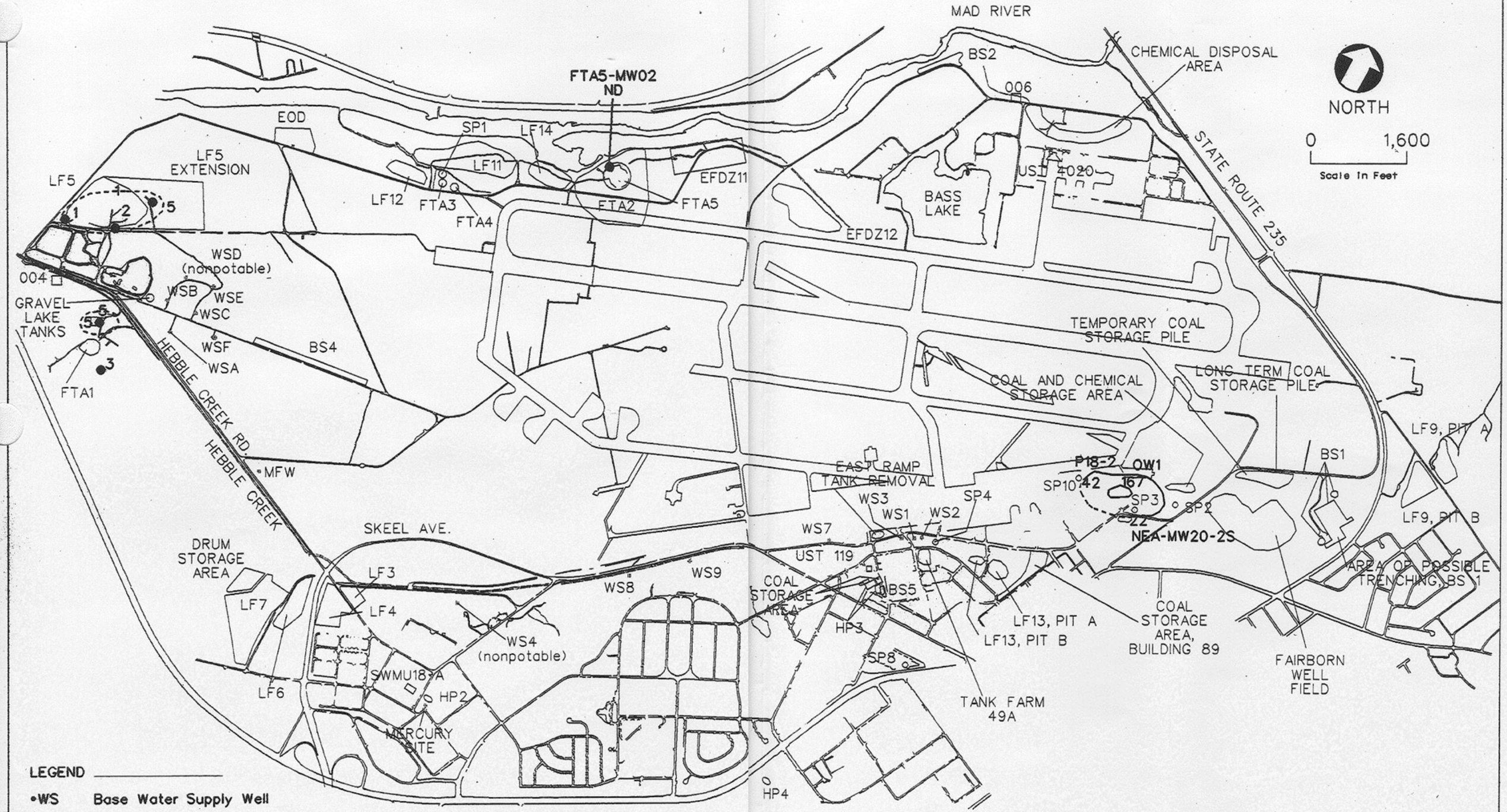
Area 3 Fairfield Aviation Depot

Area 5 Expansion 1942 to 1943

Area 6

FIGURE 6
Location of Past Hazardous Substance Activities – Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

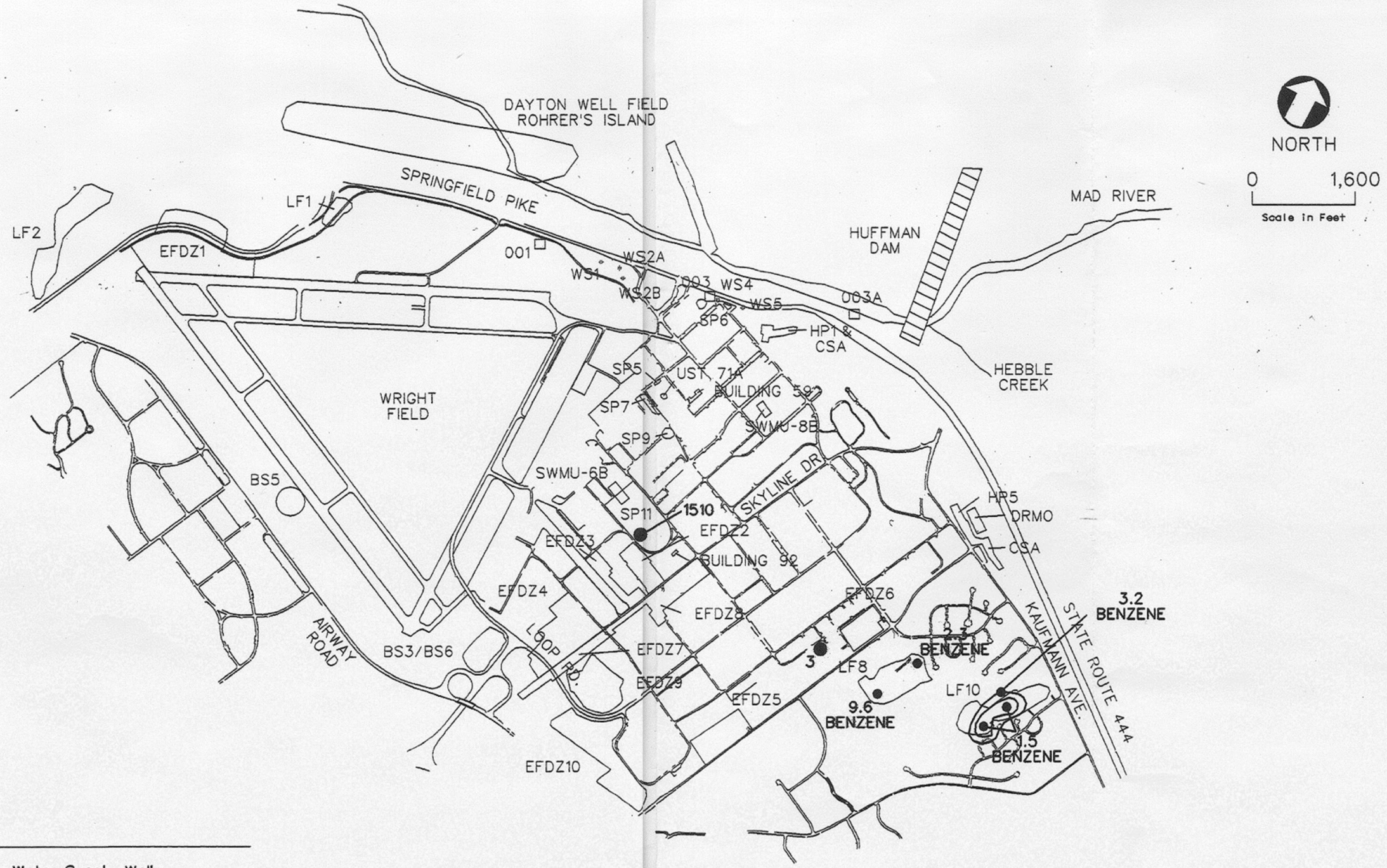
S-71042.02-2/97-6



LEGEND

- •WS Base Water Supply Well
- •MFW Marksmanship Facility Well (noncommunity well)
- ——— Contour of ΣBTEX, 1, 5, 50, 500 ug/l
- ------ Contour is Uncertain
- 3● Approximate Monitoring Well Location and BTEX Concentration, ug/l

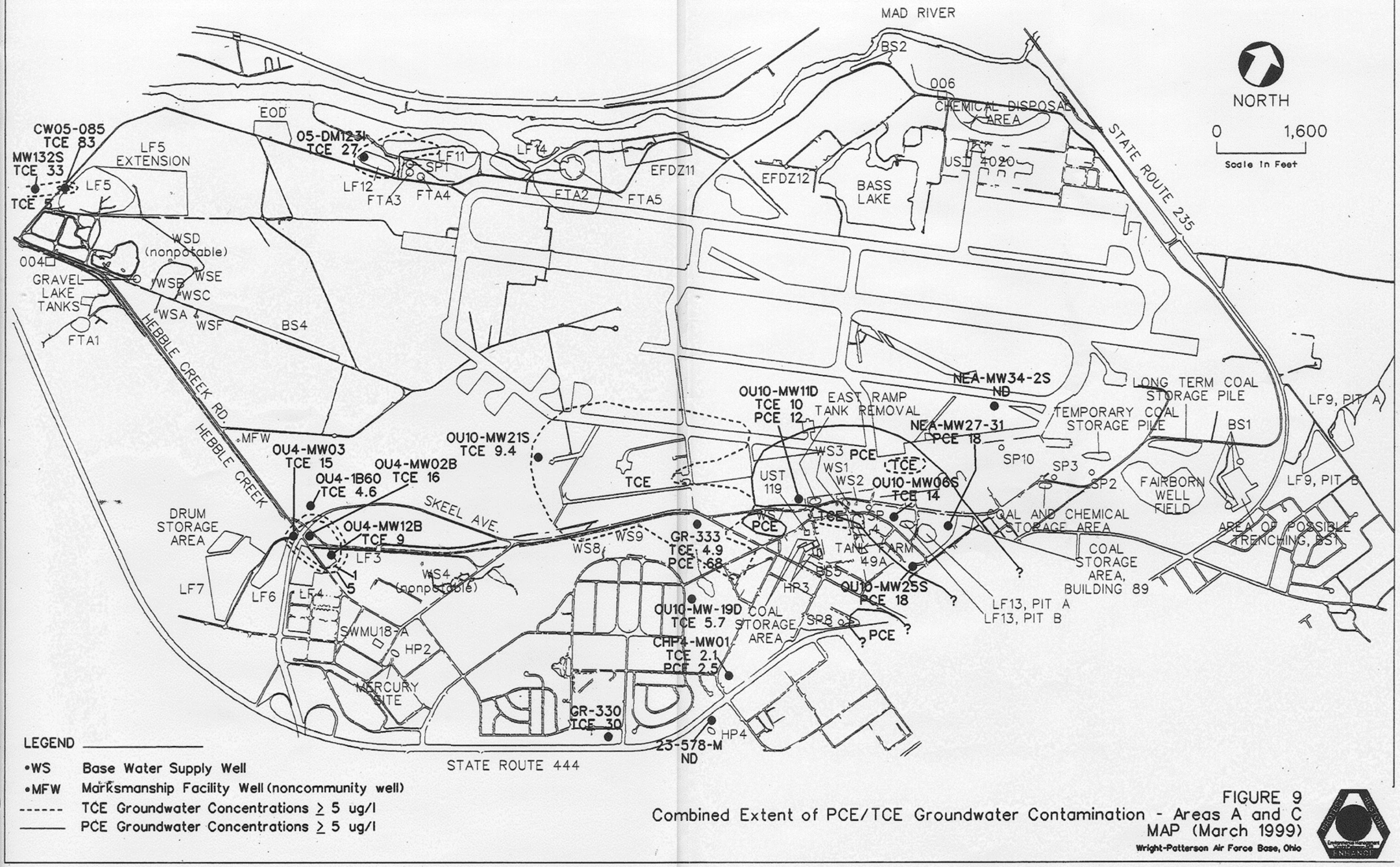
FIGURE 7
Groundwater BTEX Concentrations - Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio



LEGEND

- •WS — Base Water Supply Well
- ——— Contour of BTEX, 1, 5, 50, 500 ug/l
- 3 ● — Approximate Monitoring Well Location and BTEX Concentration, ug/l

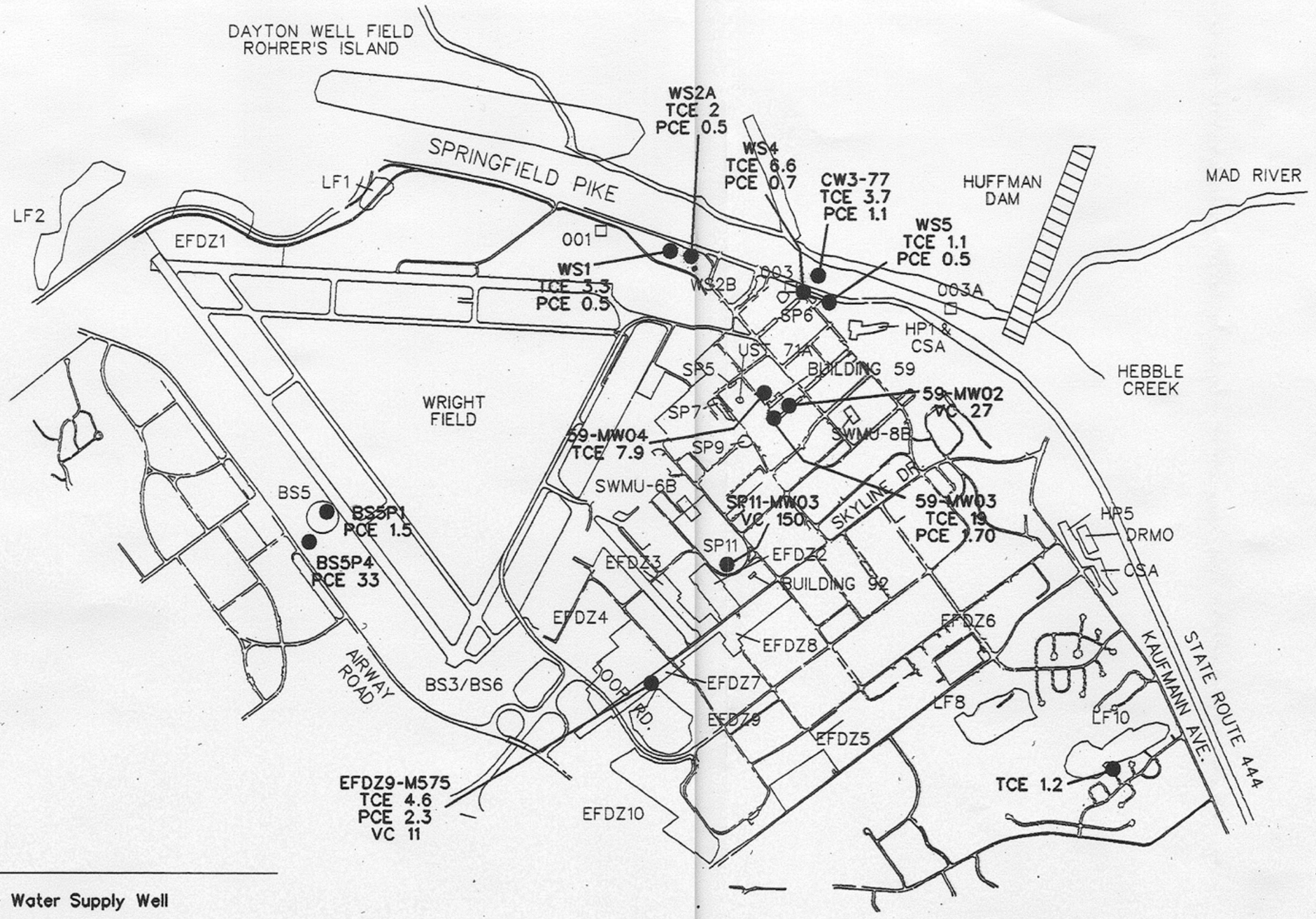
FIGURE 8
Groundwater BTEX Concentration - Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio



LEGEND

- •WS Base Water Supply Well
- •MFW Marksmanship Facility Well (noncommunity well)
- ------ TCE Groundwater Concentrations ≥ 5 ug/l
- ——— PCE Groundwater Concentrations ≥ 5 ug/l

FIGURE 9
Combined Extent of PCE/TCE Groundwater Contamination - Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio



LEGEND

- •WS — Base Water Supply Well
- BS5P1 ● — Approximate Monitoring Well Location and TCE, PCE, or VC Concentrations

Note:
1. Chlorinated VOC in GW reported in ug/L.
2. Maximum of CSL & OSL concentrations shown.

FIGURE 10
Combined Extent of PCE/TCE Groundwater Contamination - Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

MAD RIVER

NORTH

0 1,600

Scale in Feet

EOD

LF5

LF5 EXTENSION

LF11

LF12

SP1

FTA3

FTA4

LF14

FTA5

FTA2

EFDZ11

EFDZ12

BS2

006

CHEMICAL DISPOSAL AREA

USI 4020

BASS LAKE

STATE ROUTE 235

004

WSD (nonpotable)

WSB

WSE

WSC

WSA

WSF

GRAVEL LAKE TANKS

FTA1

BS4

HEBBLE CREEK RD.

HEBBLE CREEK

MFW

SKEEL AVE.

DRUM STORAGE AREA

LF7

LF6

LF3

LF4

WS4 (nonpotable)

SWMU18-A

HP2

MERCURY SITE

WS8

WS9

WS7

EAST RAMP TANK REMOVAL

WS3

WS1

WS2

SP4

COAL STORAGE AREA

UST 119

HP 3

BS5

TANK FARM 49A

SP8

HP4

STATE ROUTE 444

LONG TERM COAL STORAGE PILE

TEMPORARY COAL STORAGE PILE

SP10

SP3

SP2

BS1

FAIRBORN WELL FIELD

COAL AND CHEMICAL STORAGE AREA

AREA OF POSSIBLE TRENCHING, BS1

LF9, PIT A

LF9, PIT B

COAL STORAGE AREA, BUILDING 89

LF13, PIT A

LF13, PIT B

LEGEND

- •WS Base Water Supply Well
- •MFW Marksmanship Facility Well (noncommunity well)
- TYPE 1 Area where no storage, release, disposal or migration has occurred
- TYPE 2 Area where only storage has occurred but no contamination has occurred
- TYPE 3 Areas where release occurred, but do not require remediation
- TYPE 4 Areas requiring remediation and all remedial actions taken
- TYPE 5 Areas requiring remediation and all remedial actions underway
- TYPE 6 Areas requiring remediation and remedial actions not yet taken
- TYPE 7 Areas requiring evaluation

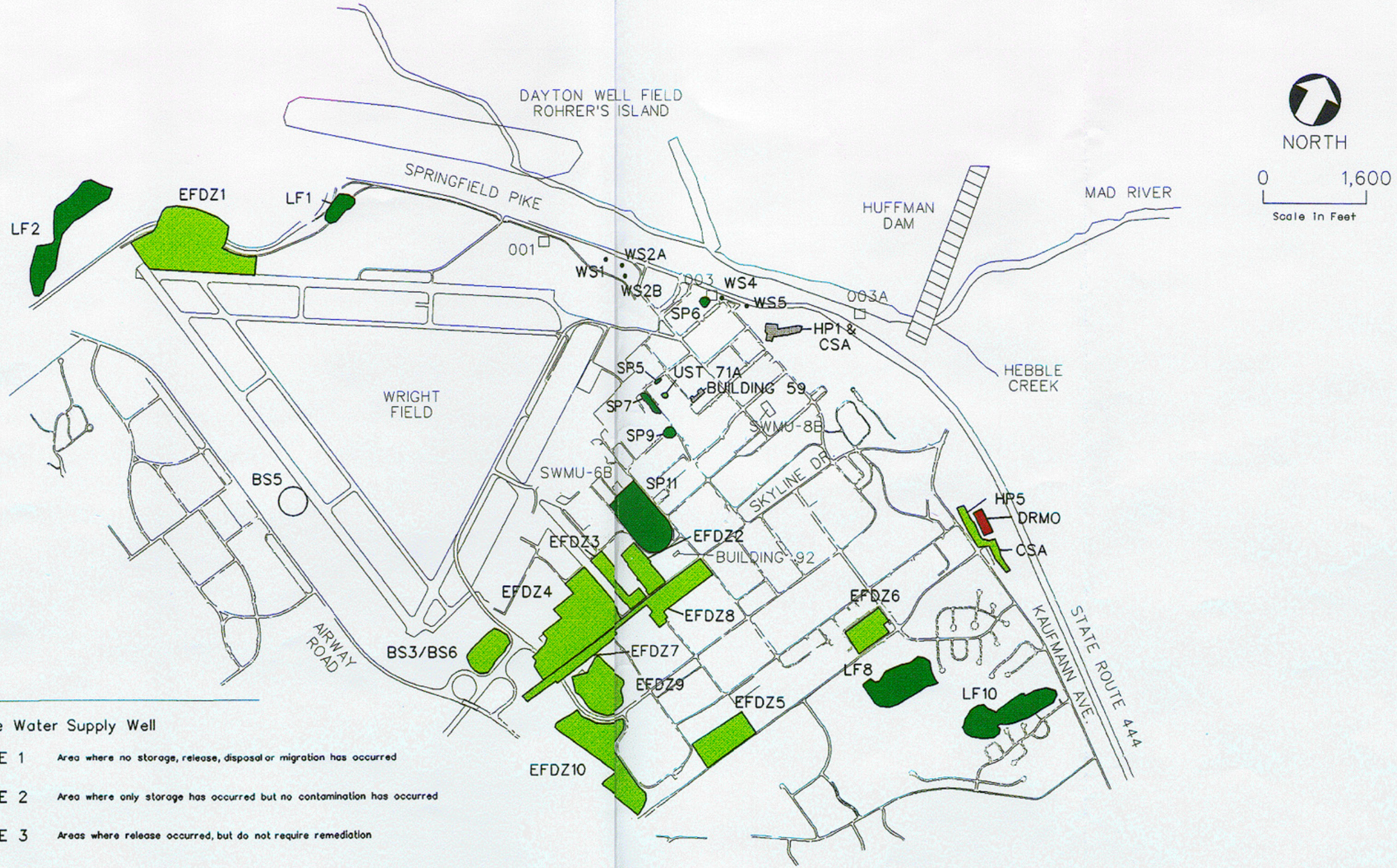
FIGURE 11

Environmental Condition of Property (Soil) - Areas A and C

MAP (March 1999)

Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE



LEGEND

•WS	Base Water Supply Well	
	TYPE 1	Area where no storage, release, disposal or migration has occurred
	TYPE 2	Area where only storage has occurred but no contamination has occurred
	TYPE 3	Areas where release occurred, but do not require remediation
	TYPE 4	Areas requiring remediation and all remedial actions taken
	TYPE 5	Areas requiring remediation and all remedial actions underway
	TYPE 6	Areas requiring remediation and remedial actions not yet taken
	TYPE 7	Areas requiring evaluation

FIGURE 12
Environmental Condition of Property (Soils) - Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

TYPE 1 — Area where no storage, release, disposal or migration has occurred

TYPE 2 — Area where only storage has occurred but no contamination has occurred

TYPE 3 — Areas where release occurred, but do not require remediation

TYPE 4 — Areas requiring remediation and all remedial actions taken

TYPE 5 — Areas requiring remediation and remedial actions underway

TYPE 6 — Areas requiring remediation and remedial actions not yet taken

TYPE 7 — Areas requiring evaluation/or LTM

NORTH

0 1,600

Scale in Feet

Mad River

EOD

LTM

LF12

LF11

SP1

FTA4

FTA3

FTA5

LF14

FTA2

EFDZ11

EFDZ12

BS2

Chemical Disposal Area

UST Bldg 4020

Bass Lake

State Route 235

LF5

LF5 Extension

WSD (nonpotable)

WSB

WSE

WSC

WSA

WSF

Gravel Lake Tanks

BS4

FTA1

Hebble Creek Rd.

MFW

Skeel Ave.

Drum Storage Area

LTM

LF7

LF6

LF4

LF3

Hebble Creek

WS4 (nonpotable)

SWMU18-A

HP2

Mercury Site

WS8

WS9

LTM

East Ramp Tank Removal

WS7

WS3

WS1

WS2

LTM

SP4

LF13

HP3

BS5

UST Bldg. 119

SP9

Tank Farm 49A

Coal Storage Bldg 89

Coal and Chemical Storage Area

Long Term Coal Storage Pile

Temporary Coal Storage Pile

SP10

Natural Attenuation

SP3

SP2

BS1

LF9

LTM

HP4

State Route 444

LEGEND

- WS — Base Water Supply Well
- MFW — Marksmanship Facility Well (noncommunity well)
- Surface Water

S-770427.02-2/97-13

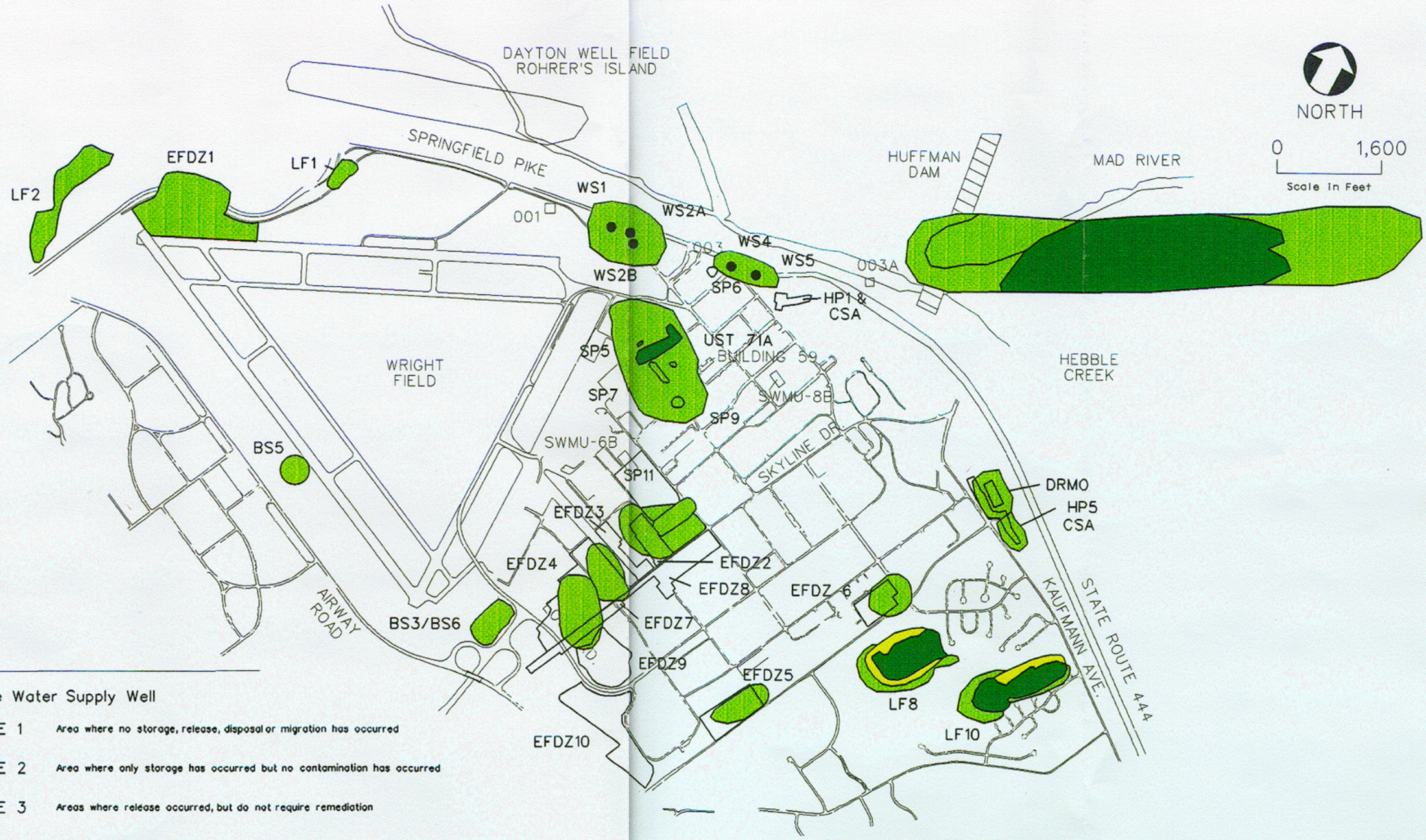
FIGURE 13

Environmental Condition of Property (Groundwater) – Areas A and C MAP (March 1999)

Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE

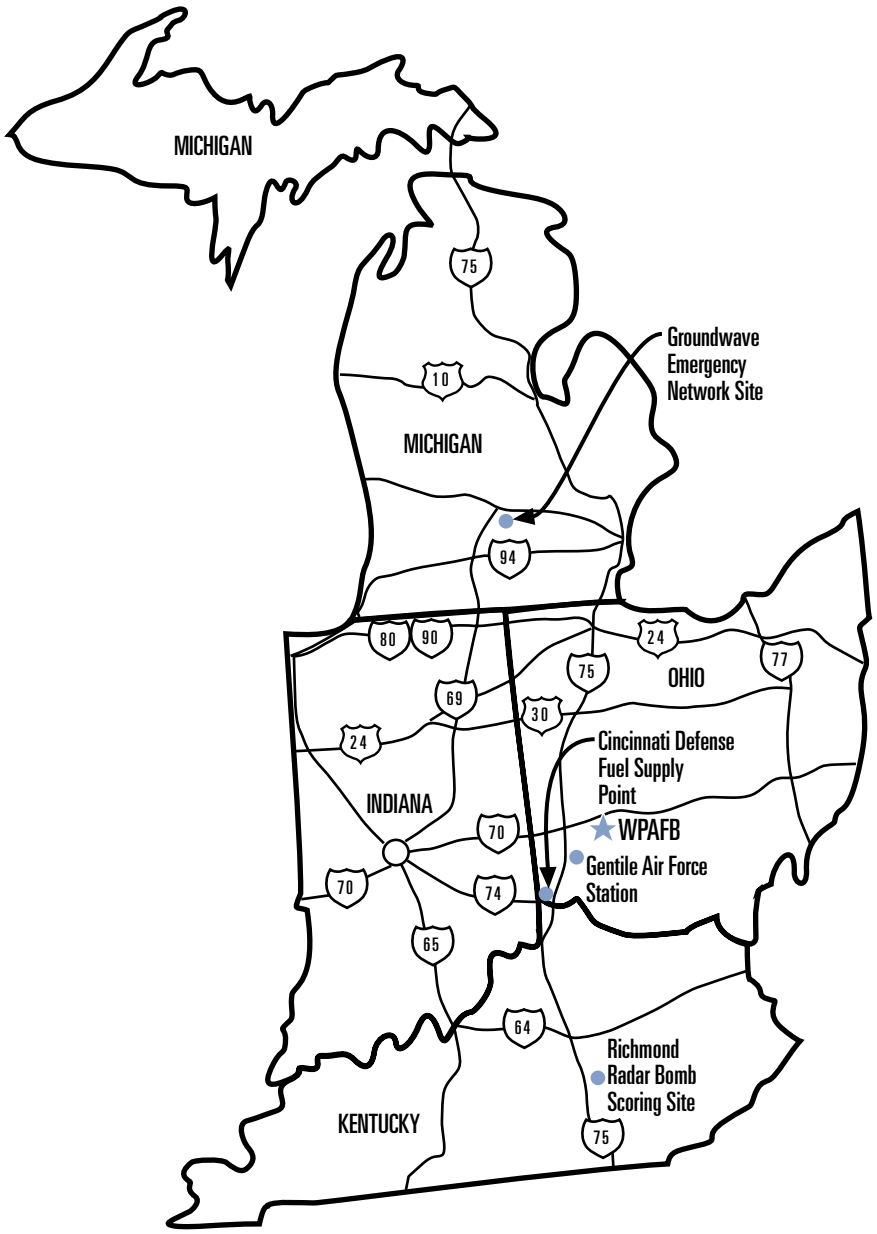
Environmental Management Wright-Patterson AFB



LEGEND

•WS	Base Water Supply Well	
	TYPE 1	Area where no storage, release, disposal or migration has occurred
	TYPE 2	Area where only storage has occurred but no contamination has occurred
	TYPE 3	Areas where release occurred, but do not require remediation
	TYPE 4	Areas requiring remediation and all remedial actions taken
	TYPE 5	Areas requiring remediation and all remedial actions underway
	TYPE 6	Areas requiring remediation and remedial actions not yet taken
	TYPE 7	Areas requiring evaluation

FIGURE 14
Environmental Condition of Property (Groundwater) - Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio



NOTE: WPAFB also includes Treiben Road and Huffman Dam properties.

FIGURE 15
Off-Base Properties and Identified Sites
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

131040.A0.RP Off Base Prop Subs 10/25/95kmw

NORTH

0 1,600

Scale in Feet

Chemical Disposal Area
BS2
UST Bldg 4020
State Route 255
Mad River
FTA5
EOD
LF12
LF11
SP1
FTA4
FTA3
LF14
EFDZ11
EFDZ12
Bass Lake
FTA2
LF5
LF5 Extension
WSD (nonpotable)
WSB
WSE
WSC
WSA
WSF
Gravel Lake Tanks
BS4
FTA1
Hebble Creek Rd.
LF9
Temporary Coal Storage Pile
SP10
SP3
SP2
BS1
WS3
WS1
WS2
East Ramp Tank Removal
WS7
SP4
LF13
DRMO
HP3
Long Term Coal Storage Pile
Coal and Chemical Storage Area
MFW
Skeel Ave.
UST Bldg. 119
WS9
WS8
Drum Storage Area
Hebble Creek
WS4 (nonpotable)
LF3
LF7
LF6
LF4
SWMU18-A
HP2
Mercury Site
Army 71st EOD Unit
Coal Storage Bldg 89
Tank Farm 49A
SP8
HP4
State Route 444

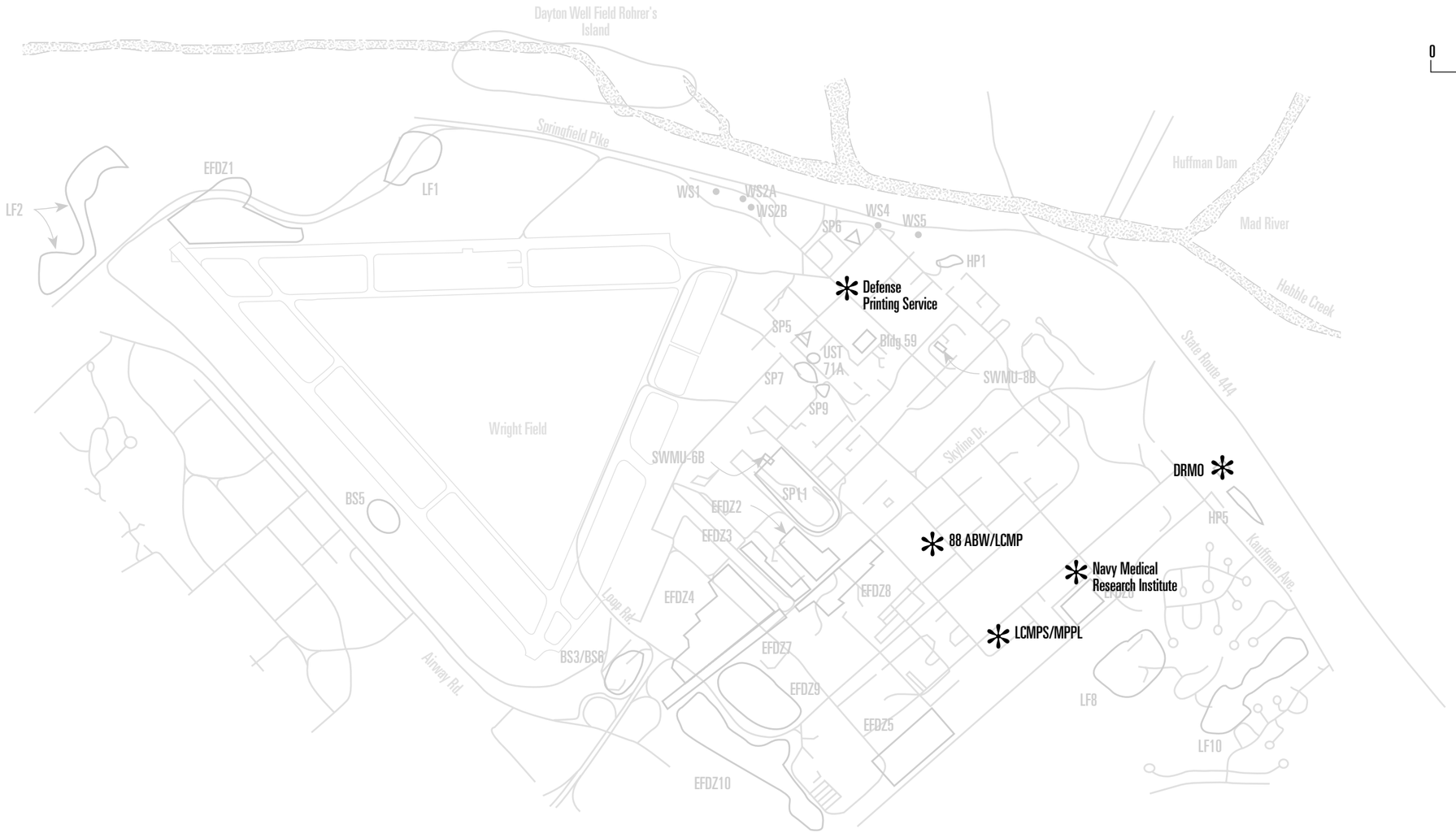
LEGEND

- WS — Base Water Supply Well
- MFW — Marksmanship Facility Well (noncommunity well)
- Surface Water
- Non-Air Force Tenant

FIGURE 16
Locations of Non-Air Force Tenants – Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management Wright-Patterson AFB

S-770427.02-2/97-16



LEGEND

- ●WS — Base Water Supply Well
- Surface Water
- ✻ — Non-Air Force Tenants

S-270427.02-2/97-17

FIGURE 17
Locations of Non-Air Force Tenants – Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management Wright-Patterson AFB

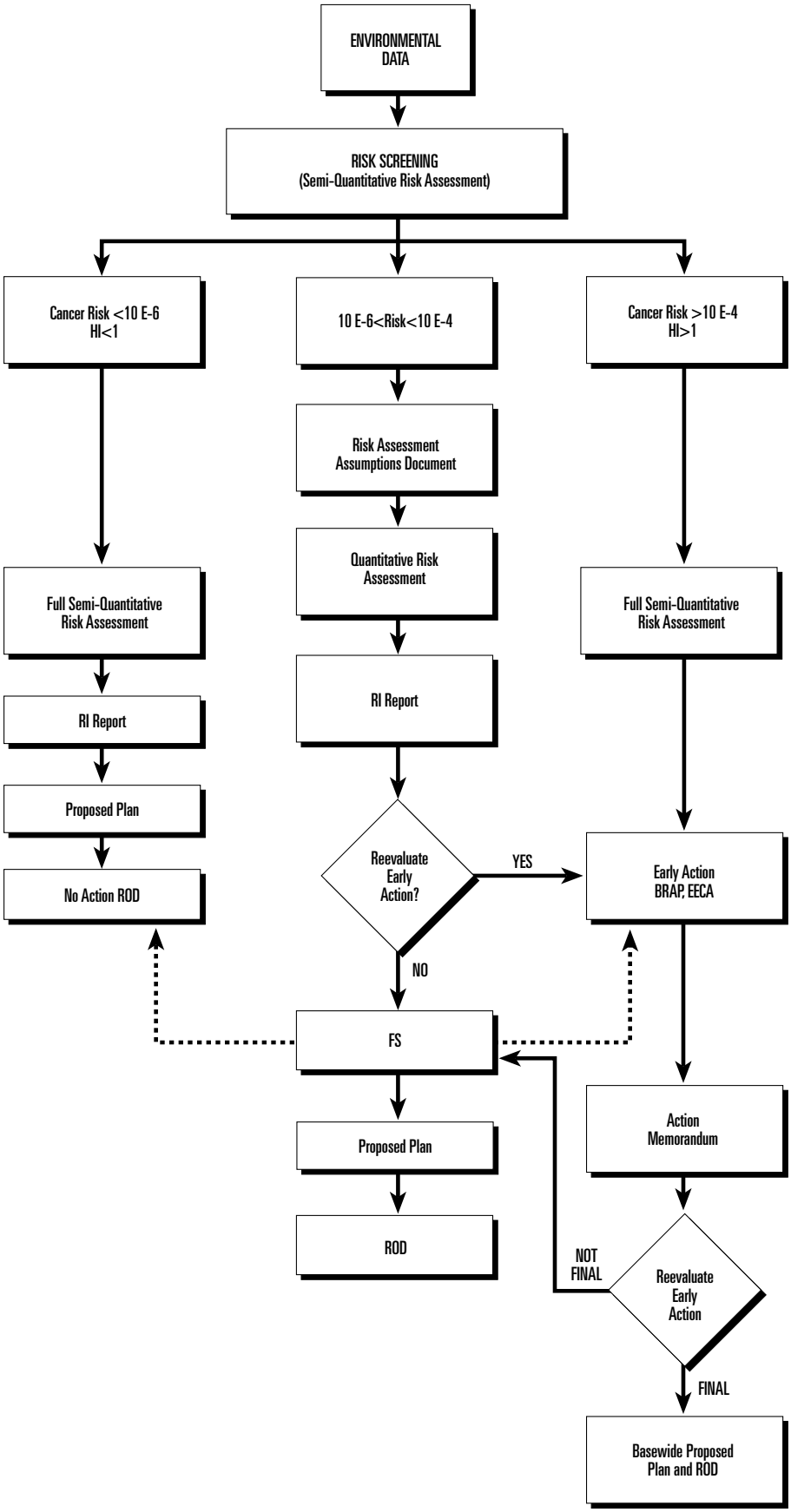


FIGURE 18
Streamlined RI/FS Process For Source OUs
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

S-770427.02-2/97-18

OU	WIMS-ES Site I.D.	Current Alias	Status	1996												1997												1998												1998				
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
1	LF 8	LF8	OM																	A																										
	LF 10	LF10	OM																	A																										
2	SS 27	SP2	LTM RA								F							P						R																					
	SS 28	SP3	LTM RA								F							P						R																					
	DP 45	BS1	NFA					P			R																																		
	OT 54	LTCSA	NFA					P			R																																		
	OT 55	TCSP	NFA					P			R																																		
	OT 56	CSB89	NFA					P			R																																		
	OT 57	C&CSA	NFA					P			R																																		
	SS 63	SP10	LTM RA								F							P						R																					
3	LF 11	LF11	OM			AC																			A							P			R								
	LF 12	LF12	RA																E					AC			A						P			R								
	LF 24	EFDZ11	NFA								R																																		
	LF 25	EFDZ12	NFA								R																																		
	SS 26	SP1	NFA								R																																		
	FT 36	FTA2	NFA								R																																		
	FT 37	FTA3	NFA								R																																		
	FT 38	FTA4	NFA								R																																		
	FT 39	FTA5	NFA								R																																		
	LF 62	LF14	NFA								R																																		
4	LF 3	LF3	RA	S								AC																				A		P			R							
	LF 4	LF4	RA	S								AC																				A		P			R							
	LF 6	LF6	RA	S								AC																				A		P			R							
	LF 7	LF7	RA	S								AC																				A		P			R							
5	LF 5	LF5	OM								A																						P			R							
	FT 35	FTA1	NFA					P			R																																		
	DP 48	BS4	NFA					P			R																																		
	ST 53	GLT	NFA					P			R																																		

Figure 19
Operable Unit Composition and Final Deliverable Due Dates
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 1 of 3)

OU	WIMS-ES Site I.D.	Current Alias	Status	1996												1997												1998												1998				
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
6	LF 1	LF1	RA	S			AC																										P			R									
	LF 2	LF2	RA	S			AC																										P			R									
	LF 14	EFDZ1	NFA				P				R																																		
7	LF 9	LF9	RA											I					S										AC				A	P			R								
8	SS 30	SP5	RD	I		E														AC													P			R									
	SS 31	SP6	NFRAP																															P			R									
	SS 32	SP7	NFRAP																															P			R									
	SS 34	SP9	NFRAP																															P			R									
	ST 50	UST 71A	RD	I		E														AC													P			R									
	SS 65	SWMU 6-B	RD	I														AC						D				A					P			R									
9	LF 15	EFDZ2	RI/FS																					I									P			R									
	LF 16	EFDZ3	RI/FS																					I									P			R									
	LF 17	EFDZ4	RI/FS																					I									P			R									
	LF 18	EFDZ5	RI/FS																					I									P			R									
	LF 20	EFDZ7	RI/FS																					I									P			R									
	LF 21	EFDZ8	RI/FS																					I									P			R									
	LF 22	EFDZ9	RI/FS																					I									P			R									
	LF 23	EFDZ10	RI/FS																					I									P			R									
	DP 47	BS3	RI/FS																					I									P			R									
	RW 61	NUC																																												
	LF 19	EFDZ6	RI/FS																					I									P			R									
	OT 44	HP5/DRMO	RI/FS																					I									P			R									
10	LF 13	LF13	NFA				P				R																																	
	SS 33	SP8	NFRAP																															P			R									
	OT 42	HP3	NFA				P				R																																	

Figure 19
Operable Unit Composition and Final Deliverable Due Dates
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 2 of 3)

OU	WIMS-ES Site I.D.	Current Alias	Status	1996												1997												1998												1998				
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
	ST 51	TFRM49A	NFA				P				R																																		
	ST 64	UST 30119	NFA				P				R																																		
	SS 29	SP4	NFRAP																														P			R								
	ST 52	ERTR	NFRAP																														P			R								
11	DP 46	BS2	NFRAP																				I										P			R								
	ST 49	UST 4020	NFRAP																				I										P			R								
	SD 58	CDA	NFRAP																				I										P			R								
	OT 40	HP1	NFRAP																														P			R								
	OT 41	HP2	RI														WP																I												
	OT 43	HP4	NFRAP																														P			R								
	OT 59	ABC																																											
	RW 60	RADBUR	NFRAP																																										
	BP 66	Burial Site 5	PA/SI														WP																SI												
	BP67	Burial Site 6	PA/SI														WP																SI												
	OT	Bldg 59	PA/SI																														WP								SI				

AC	=	Action Memorandum	WP	=	Work plan
D	=	Remedial Design	S	=	Site Specific Removal Action Plan
E	=	EE/CA	P	=	Proposed Plan
I	=	Remedial Investigation	R	=	Record of Decision
F	=	Feasibility Study	A	=	Remedial Action
OU	=	Operable Unit	NFRAP	=	No Further Response Action Planned
LTM	=	Long-term monitoring	NFA	=	No Further Action
SI	=	Site investigation	OM	=	Operating & Maintenance

Figure 19
Operable Unit Composition and Final Deliverable Due Dates
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 3 of 3)

Operable Unit	1995			1996												1997											
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1-Source																				A					M		
2-Source								P			R																
2-Remedial											F								M	P				R	M		
3-Source	P										R																
3-LF11 Removal		S				AC				D															A		
3-LF12 Removal																			E	D		AC					A
4-LF Source			I	S								AC							D								
4-HP2 Source																	S									A	
5-Source																											
5-Removal											A						M			M			M			M	
6			I	S			AC												D						A		
7														I					S			D					

Operable Unit	1998												1999												2000					
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
1-Source	M			M			M			M			M			M			M			M			M			M		
2-Source																														
2-Remedial				M						M						M						M						M		
3-Source																														
3-LF11 Removal						P			R																					
3-LF12 Removal						P			R	M						M						M						M		
4-LF Source					A	P			R	M						M						M						M		
4-HP2 Source				I		P			R																					
5-Source						P			R																					
5-Removal	M					M							M					M							M					M
6						P	A		R																					
7					A	P			R																					

Legend:

S = Site-Specific Removal Plan
I = Remedial Investigation
F = Feasibility Study
P = Proposed Plan
R = Record of Decision
D = Remedial Design
A = Remedial Action (completion dates)
AC = Action Memorandum
M = Monitoring
E = EE/CA

Figure 20
Strategy and Primary Document Timeline for OUs at WPAFB
MAP (March 1999)
Wright-Patterson AFB, Ohio

DAY\MAP95F20.XLS

Operable Unit	1995			1996												1997											
	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
8				I		E												AC				D					
9																								I			
10			I				P				R																
11																						I					

Operable Unit	1998												1999												2000					
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
8	A					P			R																					
9					AC	DP			R																					
10																														
11						P			R																					

Legend:

S = Site-Specific Removal Plan
I = Remedial Investigation
F = Feasibility Study
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Figure 20
Strategy and Primary Document Timeline for OUs at WPAFB
MAP (March 1999)
Wright-Patterson AFB, Ohio

DAY\MAP95F20.XLS

Figure 21
Projected Restoration Program Master Schedule

	OPERABLE UNIT 9 Continued	Mon 1/2/95
	Basewide Proposed Plan	Mon 1/2/95
	Basewide ROD	Mon 10/2/95
	EFDZ7	**Wed 10/4/95**
	Remedial Investigation	Wed 10/4/95
	Basewide Proposed Plan	Wed 7/22/98
	Basewide ROD	Mon 9/21/98
	EFDZ8	**Wed 10/4/95**
	Remedial Investigation	Wed 10/4/95
	Basewide Proposed Plan	Wed 7/22/98
	Basewide ROD	Mon 9/21/98
	EFDZ9	**Wed 10/4/95**
	Remedial Investigation	Wed 10/4/95
	Basewide Proposed Plan	Wed 7/22/98
	Basewide ROD	Mon 9/21/98
	EFDZ10	**Wed 10/4/95**
	Remedial Investigation	Wed 10/4/95
	Basewide Proposed Plan	Wed 7/22/98
	Basewide ROD	Mon 9/21/98
	HP5/DRMO	**Mon 10/2/95**
	Remedial Investigation	Wed 10/4/95
	Basewide Proposed Plan	Mon 6/22/98
	Basewide ROD	Mon 9/21/98
	EE/CA	Tue 3/10/98
	RD	Mon 6/8/98
	RA	Mon 9/21/98
	OPERABLE UNIT 10	**Mon 10/2/95**

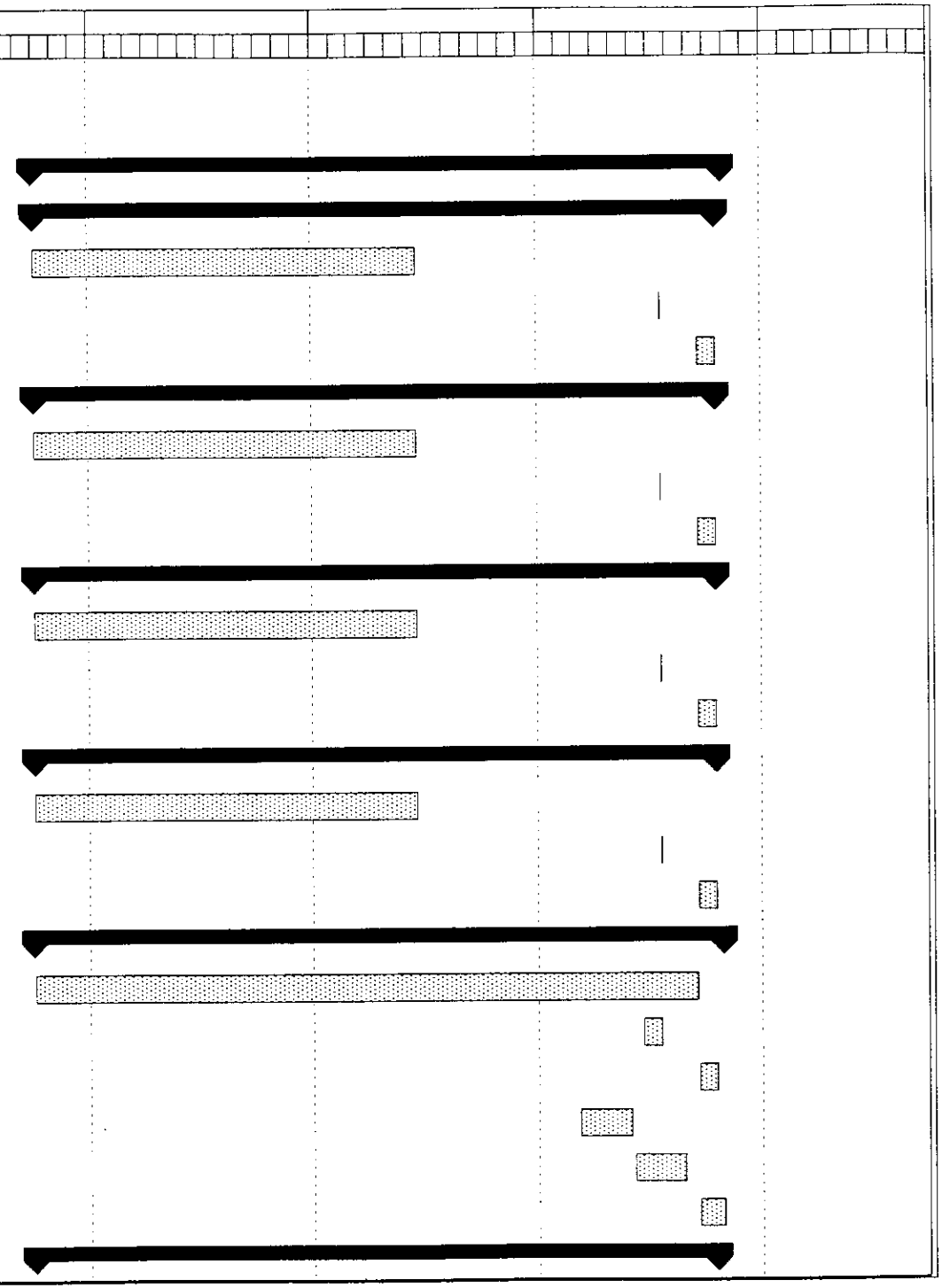


Figure 21
Projected Restoration Program Master Schedule

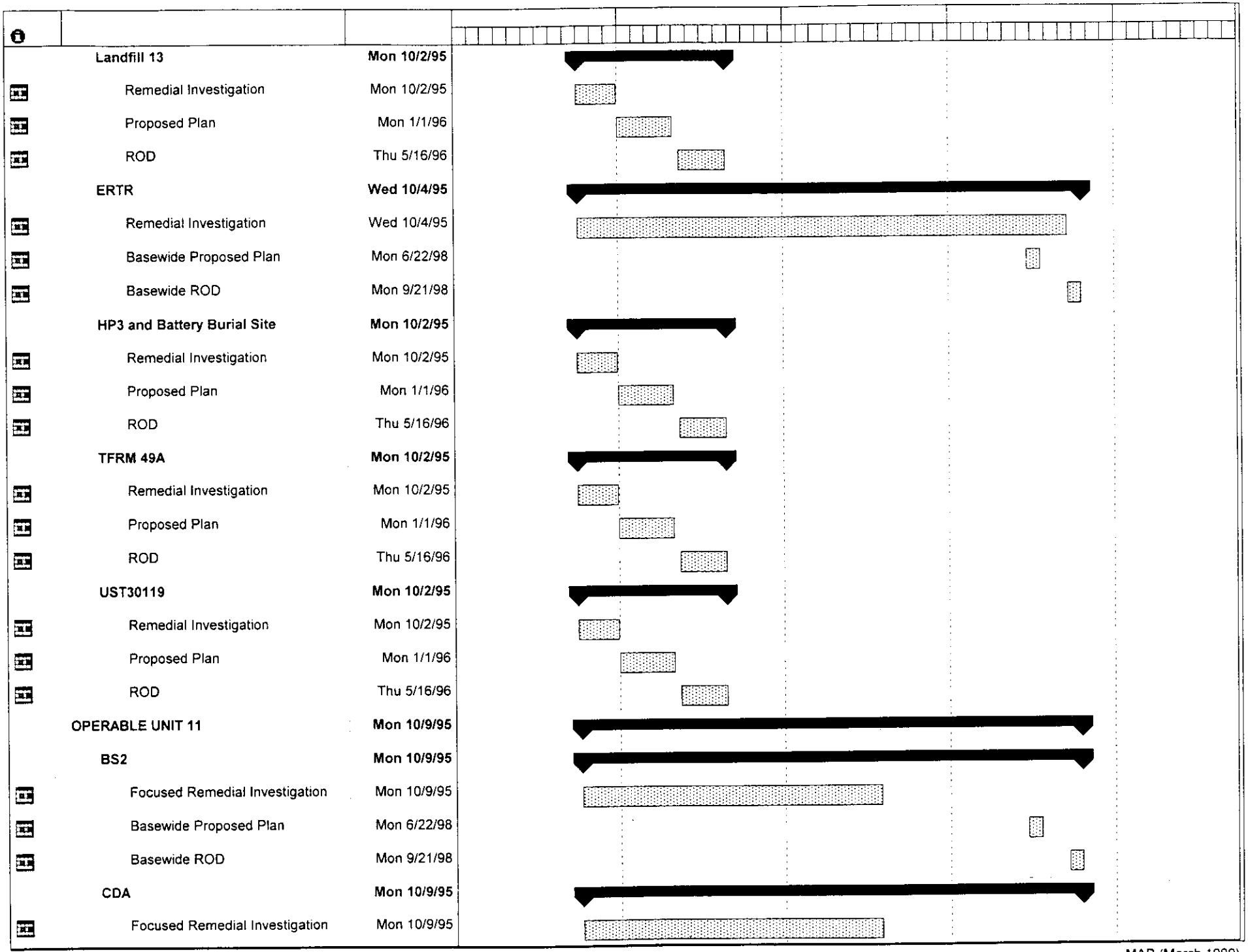
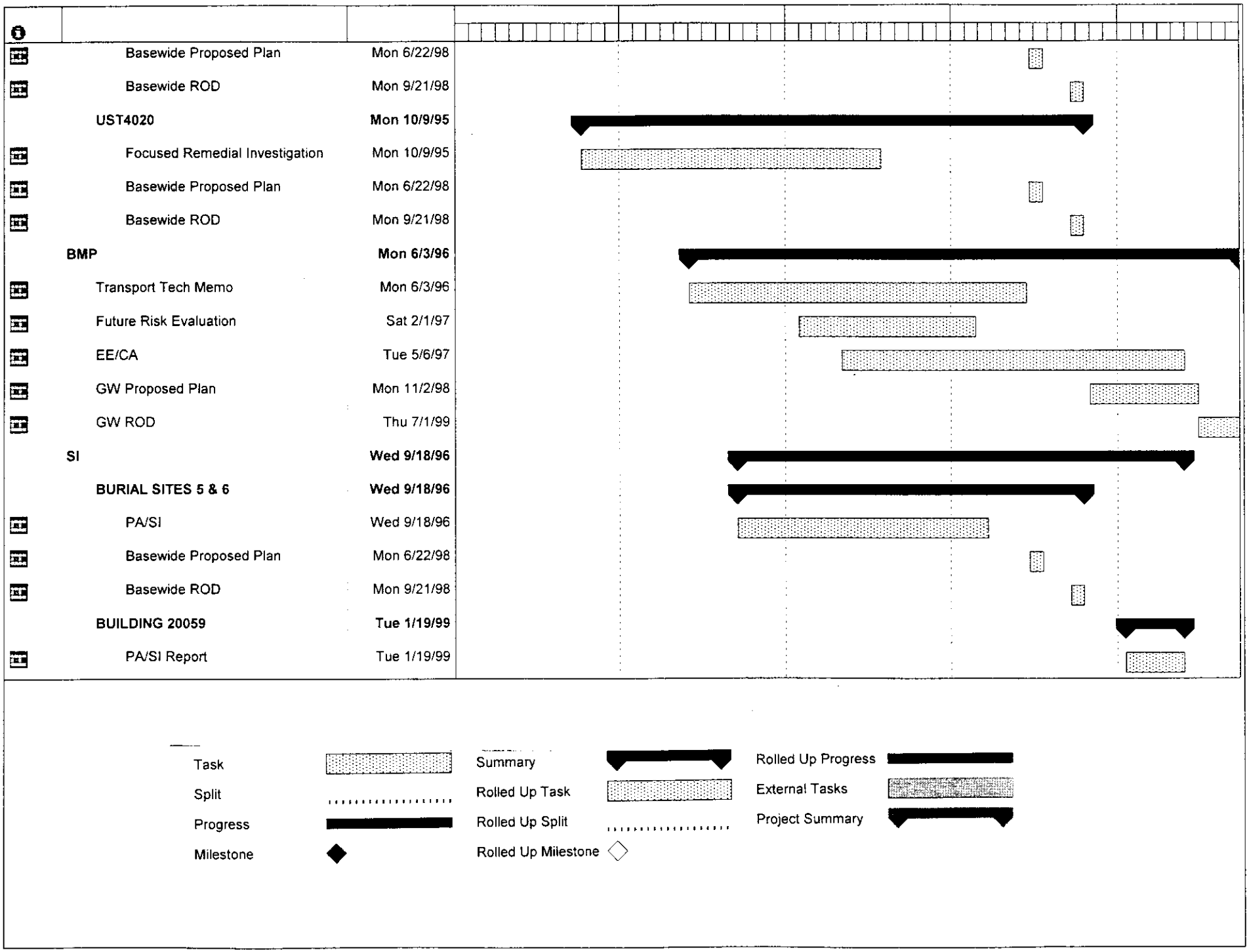


Figure 21
Projected Restoration Program Master Schedule



CHAPTERS 1 – 6
TABLES

MAP Core Team Members			
Name/Organization	**Title**	**Phone**	**Role/Responsibility**
Ed Finke WPAFB EM	Air Force RPM	(513) 257-5627	WPAFB IRP Program Manager
Treva Bashore WPAFB EMR	Project Manager	(513) 257-2201	MAP Project Manager
Bonnie Buthker Cherrie Martin Ohio EPA	State RPM	(513) 285-6469 (513) 285-6457	State Regulatory
Ken Klewin EPA Region 5	U.S. EPA RPM	(312) 886-0394 (312) 886-3010	Federal Regulatory
Other Key Participants			
Kay Binzer Base Public Affairs	Public Affairs	(513) 257-5886	Community Relations
Melanie Pershing Base Compliance	RCRA Manager	(513) 257-7152 257-7686	Compliance Issues
Omi Makhijani HQ AFMC/CEVR	IRP Project Manager	(513) 257-7053	AFMC HQ Review and Coordination
John Wolfe EMR	IRPIMS/EMIS Manager	(513) 257-2201	Data Management
Tom Winston OEPA	District Chief	(513) 285-6357	State RCRA/NPDES Issues
Ed Finke WPAFB EM	Risk Assessment Manager	(513) 257-5627	Risk Assessment
Carol Young Dave Dihrkop ASC/PKWOE	Contract Officer	(513) 257-6571	Contract Management
Carol Satterfield Base JAE	Environmental Legal Advisor	(513) 257-3628	Legal Support
Ray Henderson Civil Engineering	Base Planner	(513) 257-4804	Future Land Use Issues

Table 1
Current WPAFB Project Team Members
MAP (March 1999)
Wright-Patterson AFB, Ohio

Environmental Advisory Board
Wright-Patterson Air Force Base
Membership List

Name	Phone	Organization
Ken Klewin	(312) 886-4794	Federal Facilities Section USEPA Region V, SRF-51
Bonnie Buthker	(513) 285-6469	Ohio EPA, OFFO/SWDO
Richard Little, Co-Chairman	(937) 426-2917	Beavercreek Township
Mr. Ed Bogden	(937) 257-3342	Beavercreek Environmental Advisory Comte
Mr. Gary Tucker, Alternate		Beavercreek Environmental Advisory Comte
Mr. Ronald E. Jennings	(937) 754-3097	City of Fairborn
Ms. Karen Hawkins, Alternate	(937) 754-3097	City of Fairborn
Ms. Donna Winchester	(937) 443-3725	City of Dayton
James P. Shoemaker, Alternate		City of Dayton
Dr. Robert Ritzi, Jr.	(937) 775-3455	Dayton Environmental Advisory Board
Mr. Wayne Nelson, Alternate	(937) 297-0909	Dayton Environmental Advisory Board
Mr. John Beasley, Alternate		Dayton Environmental Advisory Board
Ms. Mary Wiseman, Alternate	(937) 873-3455	Dayton Environmental Advisory Board
Ms. Denise Brooks	(408) 925-3497	GE Nuclear
Mr. Scott Hammond	(937) 223-6323	Miami Valley Regional Planning Com
Mr. Ned Pennock	(937) 223-1271	Miami Conservancy District
Ms. Gavine Pitner	(937) 294-7545	League of Women Voters
Ms. Kathleen Robinson	(937) 431-2863	Progressive Southern View, Neighborhood Assn
Mr. Tracy Slayton	(937) 864-1117	Greene Environmental Coalition
Mr. Bruce Cornett, Alternate	(937) 767-2109	Greene Environmental Coalition
Mr. Jack Falleur, Alternate		Greene Environmental Coalition
Mr. Tom Tweed	(937) 873-3121	Sierra Club
Mr. Jim Swaney, Alternate		Sierra Club
Ms. Carol Winslow, Alternate		League of Women Voters
Mr. Ron Lester, Co-chairman	(937) 257-5627, x220	Director, 88 ABW/ME, WPAFB
Ms. Kay Binzer	(937) 257-5627, x222	Public Affairs, 88 ABW/EM, WPAFB

Table 2
Current (16 Oct 96) Environmental Advisory Board Members
MAP (March 1999)
Wright-Patterson AFB, Ohio

Period	Type of Operation	Potential Hazardous Substance Activity	Map Reference
1904-1916	Wright Brothers conducted aircraft experiments and flying lessons	Small quantity fuels	1
1917	Military aviation school	Fuels	2
1918	Fairfield Aviation Depot for warehousing and supply operations	Fuels, industrial shops for aircraft engine maintenance	3
1927	Wright Field constructed for design, construction, and testing of military aircraft and components	Fuels, industrial shops, research and development shops and laboratories	4
1940–45	Wright Field expanded from 30 to 300 buildings. Patterson Field added warehouses, paved runways, and headquarters complex (Area A).	Fuels, industrial shops, research and development shops and laboratories, construction debris	4 3 5
1951–1958	Combat units included the 56th Fighter-Interceptor Squadron, the 58th Air Division	Fuels, fire protection training areas	4 5 6
1951–1975	17th Bomb Wing	Fuels, fire protection training areas	4 5 6
1993–present	906th Tactical Fighter Group (left in 1975) 907th was re-designated to the 445th in 1994	Fuels, fire protection training areas	4 5 6

Table 3
History of WPAFB Operations
MAP (March 1999)
Wright-Patterson AFB, Ohio

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Name	Area (acres)	Location	Date Acquired	Dates of Operation
Cincinnati Defense Fuel Supply Plant	67	4820 River Road Cincinnati, Ohio	1951	1951–present
Gentile Air Force Station (DESC)	165	1507 Wilmington Pike Kettering, Ohio	1943 (est.)	1943–present
Trebein Road	92	Beavercreek, Ohio	1958	1958–present
Wright-Patterson 01 (Huffman Dam)	8	State Route 4 Bath Township, Ohio	1953	1953–present
Richmond Radar Bomb Scoring Site	2	Blue Grass Army Depot Richmond, Kentucky	1963	1963–Nov.94
Newark AFB	10	Newark, Ohio	1996	1996-present
Kansas City, Missouri	11	Kansas City, Missouri	1995	1995-present
Holt Michigan GWEN Site	15	Holt, Michigan	1995	1995-present
Jefferson City, Tennessee	11	Jefferson City, Tennessee	1998	1998-present

Table 4
Off-Base Properties
MAP (March 1999)
Wright-Patterson AFB, Ohio

DAY\J:\MAP95T04.DOC

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
1	LF1	LF1	OU 6	Landfill 1	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1920s-1940	No Action ROD/O&M	ORC/ CERCLA	NR	Cap upgrade, drainage ugrade
2	LF2	LF2	OU 6	Landfill 2	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions, misc. chemicals and hospital wastes disposed of from 1944 to 1955. Hardfill disposal from 1955 to 1975.	1975	No Action ROD/O&M	ORC/ CERCLA	NR	1990 drum removal, Cap upgrade, drainage upgrade
3	LF3	LF3	OU 4	Landfill 3	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1940-1944	No Action ROD	ORC/ CERCLA	NR	Long term methane monitoring
4	LF4	LF4	OU 4	Landfill 4	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1944-1949	No Action ROD	ORC/ CERCLA	NR	Long term methane monitoring
5	LF5	LF5	OU 5	Landfill 5	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals. Ash disposed of until 1991.	1945-1991	No Action ROD/O&M	ORC/ CERCLA	NR	Sub-title D landfill cap GW extraction and treatment, Long term monitoring of groundwater
6	LF6	LF6	OU 4	Landfill 6	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1949-1952	No Action ROD/O&M	ORC/ CERCLA	NR	Cap upgrade Long term methane monitoring

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
7	LF7	LF7	OU 4	Landfill 7	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1952-1962	No Action ROD/O&M	ORC/ CERCLA	NR	1990 drum removal, Cap upgrade, Long term methane monitoring
8	LF8	LF8	OU 1	Landfill 8	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1947-1970	Source Control ROD/O&M /LTM	ORC/ CERCLA	NR	1990 drum removal, Subtitle D cap, Leachate collection, Long term monitoring, Methane mitigation
9	LF9	LF9	OU 7	Landfill 9	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions, misc. chemicals and hospital wastes.	1962-1964	No Action ROD/O&M	ORC/ CERCLA	NR	Cap upgrade
10	LF10	LF10	OU 1	Landfill 10	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions, misc. chemicals and hospital wastes.	1965-1970	Source Control ROD/O&M /LTM	ORC/ CERCLA	NR	Subtitle D cap, Leachate collection, Alternative water supply, Long term monitoring, Methane mitigation
11	LF11	LF11	OU 3	Landfill 11	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions, misc. chemicals and hospital wastes.	1968-1977	No Action ROD/O&M	ORC/ CERCLA	NR	1990 drum removal, Cap upgrade
12	LF12	LF12	OU 3	Landfill 12	Acids, bases, neutrals, flammable liquids, flammable solids, mercury, cyanide compounds, arsenic, nitric oxide, elemental metals, trimethylamine, boron trifluoride, phosgene, gas, radioactive.	1968-1973	No Action ROD/O&M	ORC/ CERCLA	NR	1990 drum removal, 1997 excavation and off-site disposal,

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
13	LF13	LF13	OU 10	Landfill 13	General refuse, also possibly TCE, solvent wastes, paint thinners, strippers, removers and wastes, hydraulic fluid, carbon remover, PD-680, cadmium, sodium cyanide, caustic soda, nickel, plating solutions and misc. chemicals.	1922-1940	No Action ROD	ORC/ CERCLA	NR	No action
14	LF14	EFDZ1	OU 6	Earthfill Disposal Zone 1	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
15	LF15	EFDZ2	OU 9	Earthfill Disposal Zone 2	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
16	LF16	EFDZ3	OU 9	Earthfill Disposal Zone 3	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
17	LF17	EFDZ4	OU 9	Earthfill Disposal Zone 4	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
18	LF18	EFDZ5	OU 9	Earthfill Disposal Zone 5	Fill materials including scrap metal and building foundation waste.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
19	LF19	EFDZ6	OU 9	Earthfill Disposal Zone 6	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
20	LF20	EFDZ7	OU 9	Earthfill Disposal Zone 7	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
21	LF21	EFDZ8	OU 9	Earthfill Disposal Zone 8	Unknown fill materials.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
22	LF22	EFDZ9	OU 9	Earthfill Disposal Zone 9	Earthfill and construction debris including fill dirt, concrete, asphalt and brush.	pre 50s- present	No Action ROD	ORC/ CERCLA	NR	No action
23	LF23	EFDZ10	OU 9	Earthfill Disposal Zone 10	Earthfill, demolition debris and possibly radioactive material.	Pre 50s - early 70s	No Action ROD	ORC/ CERCLA	NR	No action

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
24	LF24	EFDZ11	OU 3	Earthfill Disposal Zone 11	Construction debris.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
25	LF25	EFDZ12	OU 3	Earthfill Disposal Zone 12	Construction debris.	1940s	No Action ROD	ORC/ CERCLA	NR	No action
26	SS26	SP1	OU 3	Spill Site 1	Oily wastes, hydrocarbon solvents, halogenated solvents, leaded gasoline (up to 2000 gal.).	1972	No Action ROD	ORC/ CERCLA	NR	No action
27	SS27	SP2	OU 2	Spill Site 2	JP-4 jet fuel (8300 gal.).	Apr-76	ROD/LTM	ORC/ CERCLA	NR	Removal action for recovery Belt skimmer of free product/ natural attenuation - LTM
28	SS28	SP3	OU 2	Spill Site 3	JP-4 jet fuel (up to 2500 gal.).	Mar-81	ROD/LTM	ORC/ CERCLA	NR	Removal action for recovery of free products/natural attenuation-LTM
29	SS29	SP4	OU 10	Spill Site 4	Fuel spill adjacent to Bldg.. 172.	Pre-1983	No Action ROD	UST	NR	No action, BUSTR
30	SS30	SP5	OU 8	Spill Site 5	Leakage from UST adjacent to Bldg.. 70.	1985-1989	No Action ROD	UST	NR	Proposed bioslurper/ Bioventing removal action/ no action
31	SS31	SP6	OU 8	Spill Site 6	Spill of PCBs adjacent to Bldg.. 14.	Pre-1986	No Action ROD	TSCA	NR	No action 1992, 1992 PCB contaminated soil removal/no action
32	SS32	SP7	OU 8	Spill Site 7	Leakage of fuel from 6 USTs.	1960s-present	No Action ROD	UST	NR	No action, BUSTR
33	SS33	SP8		Spill Site 8	Spill of PCBs at substation G near Bldg. 167.	unknown	No Action ROD	TSCA	NR	No action 1991, 1990 PCB contaminated soil removal/no action
34	SS34	SP9	OU 8	Spill Site 9	Unknown petroleum product.	unknown	No Action ROD	UST	NR	No action
35	FT35	FTA1	OU 5	Fire Training Area 1	Oily wastes, hydrocarbon solvents, halogenated solvents, leaded gasoline, chlorobromemethane.	1950-1955	No Action ROD	ORC/ CERCLA	NR	No action
36	FT36	FTA2	OU 3	Fire Training Area 2	Oily wastes, hydrocarbon solvents, halogenated solvents, leaded gasoline.	1955-1960	No Action ROD	ORC/ CERCLA	NR	No action
37	FT37	FTA3	OU 3	Fire Training Area 3	Oily wastes, hydrocarbon solvents, halogenated solvents, leaded gasoline.	1960-1980	No Action ROD	ORC/ CERCLA	NR	No action

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
38	FT38	FTA4	OU 3	Fire Training Area 4	Oily wastes, hydrocarbon solvents, halogenated solvents, leaded gasoline.	1960-1980	No Action ROD	ORC/ CERCLA	NR	No action
39	FT39	FTA5	OU 3	Fire Training Area 5	Uncontaminated JP-4 fuel.	1981- present	No Action ROD	ORC/ CERCLA	NR	No action
40	OT40	HP1		Central Heating Plant 1, Bldg. 66	Coal pile.	1930-1980	No Action ROD	ORC/ CERCLA	NR	No action
41	OT41	HP2		Central Heating Plant 2, Bldg. 271	Coal pile, mercury spill.	1940s-1980	No Action ROD	ORC/ CERCLA	NR	No action (coal pile) NFAP (Mercury site)
42	OT42	HP3	OU 10	Central Heating Plant 3, Bldg. 170	Coal pile.	1939-1980	No Action ROD	ORC/ CERCLA	NR	No action
43	OT43	HP4		Central Heating Plant 4, Bldg. 1240	Coal pile.	1957- present	No Action ROD	ORC/ CERCLA	NR	No action
44	OT44	HP5	OU 9	Central Heating Plant 5, Bldg. 770	Coal pile.	1956- present	No Action ROD	ORC/ CERCLA	NR	No action
45	DP45	BS1	OU 2	Burial Site 1	Fuel tank sludges containing tetraethyl lead.	1966-1971	No Action ROD	ORC/ CERCLA	NR	No action
46	DP46	BS2	OU 11	Burial Site 2	Fuel tank sludges containing tetraethyl lead.	1971-1975	No Action ROD	ORC/ CERCLA	NR	No action
47	DP47	BS3	OU 9	Burial Site 3	Fuel tank sludges containing tetraethyl lead.	unknown	No Action ROD	ORC/ CERCLA	NR	No action
48	DP48	BS4	OU 5	Burial Site 4	Unknown drummed material.	unknown	No Action ROD	ORC/ CERCLA	NR	1990 Drum removal, No action

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
49	ST49	UST4020	OU 11	Underground Storage Tank, Bldg. 4020	Leakage from UST containing jet fuel, and hydraulic fluid.	1956-1986	No Action ROD	ORC/ CERCLA	NR	No action
50	ST50	UST 71A	OU 8	Underground Storage Tanks, Bldg. 71A	Leakage from USTs containing fuel, waste oil and gasoline.	? - 1985	No Action ROD	ORC/ CERCLA	NR	No action
51	ST51	TFRM49A	OU 10	Tank Farm 49A	Spillage/leakage of JP-4 and stoddard solvent.	unknown	No Action ROD	UST	NR	No action
52	ST52	ERTR		East Ramp Tank Removal	Leakage from UST.	unknown	No Action ROD	ORC/ CERCLA	NR	No action
53	ST53	GLT	OU 5	Gravel Lake Tanks	Unknown sludges and other wastes.	unknown	No Action ROD	ORC/ CERCLA	NA	No Action
54	OT54	LTCSA	OU 2	Long Term Coal Storage Area	Coal pile.	1930s-1989	No Action ROD	ORC/ CERCLA	NA	No action
55	OT55	TCSP	OU 2	Temporary Coal Storage Pile	Coal pile.	1949- late 50s	No Action ROD	ORC/ CERCLA	NA	No action
56	OT56	CSB89	OU 2	Coal Storage Bldg. 89	Coal pile.	1941- early 70s	No Action ROD	ORC/ CERCLA	NA	No action
57	OT57	C&CSA	OU 2	Coal and Chemical Storage Area	Coal, acids and carbon tetrachloride.	1940s-1970s	No Action ROD	ORC/ CERCLA	NA	No action
58	SD58	CDA	OU 11	Chemical Disposal Area	Ammonia wastes, paint remover and aircraft washing chemicals (PD-680, methyl ethyl ketone).	1963-1974	No Action ROD	ORC/ CERCLA	NA	No action

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

Site No.	WIMS-ES Site ID	Current Alias	Operable Unit	Description	Material Disposal	Date of Operation	Status	Regulatory Mechanism	Relative Risk	Action
59	OT59	BMP	Ground Water	Areas A, B, C	Originally created for basewide groundwater contamination and monitoring. Subsequently, it was decided to address groundwater within the OUs. However, in 1994 the groundwater operable unit concept was revisited. With agency concurrence, all basewide groundwater contami-nation concerns were consolidated into the basewide monitoring program (BMP).		LTM	ORC/ CERCLA	Area A&C LOW/ MEDIUM	Long term monitoring.
60	RW60	RADB		Radioactive Waste Burial Site		before 1951	No Action ROD	ORC/ CERCLA	NR	No action
61	RW61	NUC		Deactivated Nuclear Reactor		1965-1970	No Action ROD	NRC	NR	No action
62	LF62	LF14	OU 3	Landfill 14	Construction debris and excavated materials.	unknown	No Action ROD	ORC/ CERCLA	NR	No action
63	SS63	SP10	OU 2	Spill Site 10	JP-4 fuel spill (about 150 gal.).	1-Oct-89	ROD/LTM	ORC/ CERCLA	NR	Natural attenuation/ long term monitoring
64	ST64	UST	OU 10	Underground Storage	Leakage from UST containing unleaded fuel	1958-1989	No Action ROD	UST	NR	No action
65	SS65	SP11	OU 9 OU 8	Spill Site 11	Occasional overflows of JP-4 fuel from oil/water separator. SWMU 6-B, where an occasional sheen occurs, is part of spill site 11.	1967-1984	No Action R ROD/O&M	ORC/ CERCLA	NR	Containment/french drain
66	DP66	B55		Burial Site 5			No Action ROD	CERCLA	NR	No action
67	DP67	B56		Burial Site 6			No Action ROD	CERCLA	NR	No action
68	SS68	SS12		Bldg. 59	Flooded basement TCE contaminated. Possible dry cleaning materials spilled or dumped.	1950 - 1980	SI	CERCLA	Not Eval.	

Table 5
WPAFB IRP Site Summary Table
MAP (March 1999)
Wright-Patterson AFB, Ohio

WIMS-ES Site I.D.	Alias	Removal Action	Purpose	Status
FT 39	FTA5	In situ bioremediation	Treat contaminated groundwater	Operated from February 1988 to December 1989.
LF 10	LF10	Temporary leachate collection system	Recover and dispose of leachate	Collection system began in March 1991. Permenant system installed 1996.
LF 2	LF2	Drum removal	Reduce contaminant source	Completed October 1990.
LF 7	LF7	Drum removal	Reduce contaminant source	Completed October 1990.
LF 8	LF8	Drum removal	Reduce contaminant source	Completed October 1990.
LF 11	LF11	Drum removal	Reduce contaminant source	Completed October 1990.
LF 12	LF12	Drum removal	Reduce contaminant source	Completed October 1990.
DP 48	BS4	Drum removal	Reduce contaminant source	Completed October 1990.
SS 27 SS 28 SS 63	SS 2, SS 3, SS 10	JP-4 free product recovery	Recover free product and reduce contaminant source	Skimmer pump placed on existing well in April 1991. Operated for 1 year. Dual pump system began operation 1993 and was discontinued in 1995 due to fire.
LF 5	LF5	Groundwater treatment	Recover and treat contaminated groundwater	Groundwater collection and treatment began in November 1991. Operation is continuing.
SS 31	SP6	TSCA removal of PCB-contaminated soil	Reduce contaminant source	Completed May 1992.
SS 33	SP8	TSCA removal of PCB-contaminated soil	Reduce contaminant source	Completed June 1990.
FT 39, SS 63 SS 27, SS 28	FTA5, SS 10 SS 2, SS 3	Technology Demonstration	Evaluate bioventing	Began June 1993 and ended October 3, 1994.
LF8 LF10	LF8 LF10	Alternative water supply	Provide alternative water supply to residential along Zink and National Roads.	Completed summer 1994.
LF 9	LF 9	Fencing	Prevent site access	Completed November 1994.
LF 5	LF 5	Landfill capping	Reduce contaminant migration and meet ARARs	Construction completed in August 1996.
SS65	SS11	French drain tie in to existing separator	Prevent petroleum migration to surface water	Completed design July 1997. construction began December 1997.
SS30 ST50	SS5 UST71A	Bioslurper/Bioventing	Recover free product, remediate excessive TPHs in soil	Portable bioslurper became operational March 1997. Completed December 1997.
LF6 LF7	LF6 LF7	Regrading and soil cover and methane monitoring	Regrade covers and improve drainage, gas monitoring	Complete May 1998
LF3 LF4	LF3 LF4	Methane monitoring	Gas monitoring	Began August 1997 - monitoring continuing
LF 1 LF 2	LF 1 LF 2	Regrading and soil cover	Regrade covers and improve drainage.	Complete July 1998
SS 27 SS 28 SS 63	SS 2, SS 3, SS 10	Free product recovery	Recover free product. Reduce contaminated source.	Installed belt skimmers operation began January 1997. EMR continues to operate and monitor
LF 9	LF 9	Regrading and soil cover	Regrade covers and improve drainage.	Completed May 1998
LF 11	LF 11	Landfill capping	Improve cap and surface drainage.	Completed June 1997
LF 12	LF 12	Landfill material removal	Eliminate groundwater contaminent source.	Completed December 1997
OT44	HP5/DRMO	Soil Removal	Eliminate PAH contamination	Completed November 1998

Table 6
Removal Action Status
MAP (March, 1999)
Wright-Patterson AFB, Ohio

Remedial Action				
OU	Site ID	Description	Soil	Groundwater/ Leachate
1	LF8	Landfill 8	Subtitle D Cap	Leachate collection, long term monitoring, methane mitigation
	LF10	Landfill 10	Subtitle D Cap	Leachate collection, long-term monitoring, alternative water supply, methane mitigation
2	SS27	Spill Site 2	Natural attenuation	LTM/Natural attenuation belt skimmer
	SS28	Spill Site 3	Natural attenuation	LTM/Natural attenuation
	DP45	Burial Site 1	No Action	No Action
	OT54	Long Term Coal	No Action	No Action
	OT55	Temporary Coal	No Action	No Action
	OT56	Coal Storage Bldg 89	No Action	No Action
	OT57	Coal and Chemical	No Action	No Action
	SS63	Spill Site 10	Natural attenuation	Long-term monitoring. Natural attenuation.
3	LF11	Landfill 11	Cap Upgrade	Long-term monitoring
	LF12	Landfill 12	Off site disposal	Long-term monitoring
	LF24	Earthfill Disposal Zone 11	No Action	No Action
	LF25	Earthfill Disposal Zone 12	No Action	No Action
	SS26	Spill Site 1	No Action	No Action
	FT36	Fire Training Area 2	No Action	No Action
	FT37	Fire Training Area 3	No Action	No Action
	FT38	Fire Training Area 4	No Action	No Action
	FT39	Fire Training Area 5	No Action	No Action
	LF62	Landfill 14	No Action	No Action
4	LF3	Landfill 3	Methane Monitoring	Long-term monitoring
	LF4	Landfill 4	Methane Monitoring	Long-term monitoring
	LF6	Landfill 6	Cap, Methane Monitoring	Long-term monitoring
	LF7	Landfill 7	Cap, Methane Monitoring	Long-term monitoring
5	LF5	Landfill 5	Landfill Cap	GW extraction and treatment, long-term monitoring
	FT35	Fire Training Area 1	No Action	No Action
	DP48	Burial Site 4	No Action	No Action
	ST53	Gravel Lake Tanks	No Action	No Action
6	LF1	Landfill 1	Cap	Long-term monitoring
	LF2	Landfill 2	Debris Removal, cap, drainage	Long-term monitoring
	LF14	Earthfill Disposal Zone 1	No Action	No Action
7	LF9	Landfill 9	Fencing, cap	Long-term monitoring

Table 7
OU Designations and
Associated Projects
MAP (March 1999)
Wright-Patterson AFB OH

8	SS30	Spill Site 5	Bioslurper/Bioventing	Bioslurper also for Product
	SS31	Spill Site 6	No Action	No Action
	SS32	Spill Site 7	No Action	No Action
	SS34	Spill Site 9	No Action	No Action
	ST50	Underground Storage 71A	No Action - Work in vicinity downgrade of SS5	No Action
	SS65	Spill Site 11	No Action Note: Some fuel contaminated, soil removed as part of groundwater removal action	French drain tie into existing O/W separator
9	LF15	Earthfill Disposal Zone 2	No Action	No Action
	LF16	Earthfill Disposal Zone 3	No Action	No Action
	LF17	Earthfill Disposal Zone 4	No Action	No Action
	LF18	Earthfill Disposal Zone 5	No Action	No Action
	LF20	Earthfill Disposal Zone 7	No Action	No Action
	LF21	Earthfill Disposal Zone 8	No Action	No Action
	LF22	Earthfill Disposal Zone 9	No Action	No Action
	LF23	Earthfill Disposal Zone 10	No Action	No Action
	DP47	Burial Site 3	No Action	No Action
	RW61	Deactivated Nuclear	No Action	No Action
	LF19	Earthfill Disposal Zone 6	No Action	No Action
	OT44	Central Heating Plant 5/DRMO	Removal action for PAHs at DRMO	No Action
10	LF13	Landfill 13	No Action	No Action
	OT42	Central Heating Plant 3	No Action	No Action
	ST51	Tank Farm 49A	No Action	No Action
	ST64	Underground Storage	No Action	No Action
	SS29	Spill Site 4	No Action	No Action
	ST52	East Ramp Tank	No Action	No Action
11	DP46	Burial Site 2	No Action	No Action
	ST49	Underground Storage	No Action	No Action
	SD58	Chemical Disposal Area	No Action	No Action
BMP	OT59	Areas A, B, and C	Basewide GW	Long-term monitoring
Other	SS33	Spill Site 8	No Action	No Action
	OT40	Central Heating Plant 1	No Action	No Action
	OT41	Central Heating Plant 2	No Action	No Action
	OT43	Central Heating Plant 4	No Action	No Action
	RW60	Radioactive Waste	No Action	No Action
	BS 5	Paint Waste	*Pending	Pending
	BS 6	Unknown	*Pending	Pending

Table 7
OU Designations and
Associated Projects
MAP (March 1999)
Wright-Patterson AFB OH

Planned Remedial Action				
OU	**Site ID**	**Description**	**Soil**	**Groundwater/ Leachate**
5	LF5	Landfill 5	No Action	Treatability study-insitu remediation of TCE plume
BMP	SP11	Spill Site 11	No Action	Treatability Study-insitu remediation of Vinyl Chloride

Table 8
Planned Remedial Actions
MAP (March 1999)
Wright-Patterson AFB OH

APPENDIX A

FISCAL YEAR FUNDING REQUIREMENTS AND SITE DESCRIPTIONS

Appendix A
Site Descriptions

Each site is described by using the current alias and is followed by WIMS-ES Site ID in parenthesis where they differ.

Landfill 1 (LF 1)

Landfill 1 was operated from the 1920s through 1940. Landfilling operations consisted of surface disposal and burning. The facility served only Area B and received small quantities of chemical wastes from research facilities. The site encompasses about 6.5 acres and is located in an old gravel quarry. During a search of historical records, an aerial photograph from 1948 was obtained that accurately locates the landfill area. Most of LF 1 now appears to be covered by Perimeter Road on Base and extends as far west as the northbound exit ramp from Harshman Road to Springfield Pike.

General Base refuse containing unknown quantities of oily wastes, and organic and inorganic chemicals, reportedly were disposed of at the site. Actual type, quantities, physical state, hazardous constituents, and pollutants disposed of were unknown.

The OU6 RI (LF 1, LF 2, and EFDZ 1) was performed in 1993–94. LF 1 was determined to be about 4 acres in size and has a maintained, grassy topsoil cover. A distinct cover layer consisting of clay, silty clay, silt, or silty sand directly overlies the fill in most areas. The fill includes construction debris and a black ash-like material in some areas, which extends to a depth of about 18 feet below ground. Two buried trenches with large ferrous objects were found in the northern portion of LF 1 using geophysical techniques. A prominent relatively impermeable 40- to-50-foot-thick till unit was encountered roughly 25 feet below ground, which may limit the vertical migration of contaminants. Low-level volatile and semi-volatile organic compounds, three pesticides, and five metals detected in refuse/fill exceeded background concentrations of those materials. Given the limited zones, in which contaminants were found in the soils, it is unlikely that they represent laterally or vertically extensive subsurface contamination. Exceedances of metals concentrations (nickel and chromium) in groundwater occurred, but without evidence of a migrating metals plume. There are currently no receptors exposed to contaminants in soils and groundwater at LF 1.

Because LF 1 is a characteristic landfill, the presumptive remedies as identified in the Basewide Removal Action Plan for Landfill Capping (IT, 1994) were evaluated as appropriate remedial actions for LF1. LF 1 is a maintenance action on the existing landfill cover under Ohio Administrative Code 3745-27-11. Fieldwork began August 1997 to provide a cover system with a minimum of a 2% slope of an 18-inch thick protective soil layer, and a 6-inch topsoil cover with vegetation. A drainage channel will be constructed along the western perimeter of the landfill to collect stormwater runoff from the landfill. The project was completed by July 1998. Groundwater issues are addressed by the Basewide

Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites. An Operation and Maintenance contract was awarded in March 1999 to ensure that the soil cover and drainage system is kept intact.

Landfill 2 (LF 2)

Landfill 2, also called Tillman Pit, was initially a gravel pit, about 23 acres in size. From the early 1940s' to 1951, the landfill was operated as a surface dump for general refuse from Area B. Refuse was placed into gravel pits in direct contact with groundwater. From 1951 to 1975, after the landfill was closed, the site was used as a surficial hardfill disposal area.

This site is in the far southwest corner of Area B. It is drained by Lilly Creek, a tributary of the Mad River that flows along the southwest border of LF 2. During the review of historical records in November 1988, several aerial photographs show the landfill operation from the date of runway construction in Area B to the completion of filling activities. The landfill boundaries were modified based on the historical photographs. It appears that LF 2 consisted of two areas with a road between them.

General Base refuse containing unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes were reportedly disposed of in LF 2. Actual quantities, types, hazardous constituents, and pollutants disposed of were unknown.

The RI of OU6 (LF 1, LF 2, and EFDZ 1) was performed in 1993–94. LF 2 was determined to be about 15 acres in size. It has a densely vegetated or forested topsoil cover, and several small piles of surficial construction debris, which are located outside the estimated limits of the buried waste. Other surficially deposited debris containing household items and automobile parts was likely dumped by trespassers before the entire LF 2 area was securely fenced in 1990. Concentrations of low level volatile organic compounds, three pesticides, and seven metals detected in the refuse/fill exceed background levels. The random low-level detections of potential site-related contaminants probably do not represent laterally or vertically extensive subsurface contamination. Even though low-level PCE concentrations were found ($\leq$ 6 ug/L) in the groundwater upgradient and within LF 2, no exceedances in drinking water standards occurred at the downgradient boundary. Drinking water standards for cadmium, chromium, and nickel were exceeded on-site; but most of the metals were present at concentrations not statistically different than background and no migrating metals plumes were identified. There is no evidence that LF 2 has affected the private drinking water wells based upon evaluation of the RI sampling data.

Lilly Creek does not appear to have been affected by LF 2. Lilly Creek is an intermittent; losing stream located hydraulically upgradient of LF 2. Concentrations of compounds detected in surface water/sediments were not significantly different than background levels. Basewide Removal Action Plan for Landfill Capping (IT, 1994) was evaluated as an appropriate remedial action for LF 2. LF 2 is a maintenance action on the existing landfill

cover under Ohio Administrative Code 3745-27-11. The trees that make up the densely forested areas of LF2 will be left undisturbed; however, the removal action will include the removal of surface debris and any low-lying areas within these wooded areas, to the extent practicable, will be filled in with earthen material to prevent ponding of surface water. Modification of the slope and drainage patterns at LF2 will reduce the potential for ponding and contaminant migration via surface water runoff. Fieldwork began August 1997 and was completed by July 1998. The Basewide Monitoring Program is addressing groundwater issues. This site is included in the 1998 ROD for 41 No Action Sites. An Operation and Maintenance contract was awarded in March 1999 to ensure that the soil cover and drainage system is kept intact.

Landfills 3, 4, 6, and 7 (LF 3, LF 4, LF 6, and LF 7), Drum Staging/Disposal Area and Heating Plant 2 (HP-2)

The types, quantities, physical states, hazardous constituents, and pollutants disposed of in Landfills 3,4,6, and 7 are not known. However, during their operation, general Base refuse containing unknown quantities of oily wastes, solvents, organic and inorganic chemicals, hospital wastes, pesticides, and polychlorinated biphenyls (PCBs) were reportedly disposed. The RI concluded that the groundwater immediately downgradient of OU4 is contaminated primarily with chlorinated VOCs and metals, largely in the upper sand and gravel zone. Where present, volatile contaminants were detected at concentrations only one to five times greater than MCLs. Groundwater contamination issues are being addressed by the Basewide Monitoring Program (BMP).

LF 3 accepted general refuse from Areas A and B from 1940 to 1944. The landfill was used as a surface dump and burn operation and covers about 3 acres. At present, it is covered with soil and supports the lush grass and small trees of a golf course.

Because LF 3 has an appropriate cover it was not considered for a presumptive remedy. The leachate/gas wells associated with LF 3 was abandoned and a landfill gas monitoring well was installed between LF 3 and Building 294 in June 1997.

LF 4 was operated from 1944 to 1949. It was constructed in an abandoned, water-filled gravel pit and covers about 8 acres. The Phase I Investigation reported that large objects, such as automobile bodies, were placed in the pit to bring the grade above the 20 to 30 feet of water in the pit. The presence of automobile bodies has not been confirmed in investigations to date, including excavation work done for the construction of a new roadway on the Base. The landfill was operated as a trench and cover operation for general refuse; the trenches are oriented northwest to southeast. Several small tributaries of Hebble Creek drain this area and flow around and over the landfill. Evidence of a coal pile was discovered just south of LF 4 adjacent to Road Z during a review of historical aerial photographs. The photographs indicate that the coal pile was present from 1944 to about 1969.

WPAFB constructed a new roadway in early 1989 to connect Areas A and C with the new State Route 444A connector and Interstate 675. The Base considered a variety of potential routes for the road and concluded that the most favorable alignment was between State Route 444A and Skeel Avenue. The road traverses a portion of LF 4. To construct the road, the portion of LF 4 underlying the roadway was excavated in 1988. During excavation, soil samples were analyzed and found to contain organic and inorganic contaminants. Several bottles were uncovered, the liquid contents were found to contain 8 to 432 parts per million (ppm) of lead. The Base issued a Partial Stop Work Order to the Contractor after the discovery of hazardous materials.

Action levels for excavation of LF 4 were established by the Contractor and the Base and concurred on by the OEPA. Subsequent soil sampling allowed partitioning of the area into hazardous and non-hazardous waste sections. The hazardous area was removed to permitted hazardous waste landfills in Ft. Wayne, Indiana, and Toledo, Ohio, whereas the non-hazardous waste was disposed of at a sanitary landfill. About 72,000 cubic yards of waste was disposed of in sanitary landfills and about 42,000 tons of waste was disposed of in hazardous waste landfills.

The remaining portion of LF 4 is fenced and paved, and Base CE uses it as a storage area. Monitoring well 11-012-M (MW-12) was removed because of its location in the path of the new road.

Because LF 4 has an appropriate cover it was not considered for a presumptive remedy. The leachate/gas wells associated with LF 4 were abandoned and landfill gas monitoring wells were installed between LF 4 and Buildings 877, 876, and 867 in June 1997.

LF 6 was operated from 1949 to 1952 and received general refuse from Areas A and B. It was conducted as a trench and cover operation in an area of about 7 acres. An intermittent stream to the south flows into Hebble Creek. An aerial photograph dated February 4, 1947, indicated that the landfill area may be closer to Communications Boulevard than earlier reports indicate. The RI ascertained, however, that the landfill did not extend to Communication Boulevard. The landfill area is now used as pastureland.

Because LF 6 is a characteristic landfill, the presumptive remedies as identified in the Basewide Removal Action Plan for Landfill Capping were evaluated as appropriate remedial actions for LF 6. The presumptive remedy for LF 6 is a native soil and vegetative cover over a partial area of LF 6, and surface water run-on/run-off controls. The native soil and vegetative cover will consist of 18 inches of common soil and 6 inches of topsoil. Construction of this cover took place from August 1997 through mid-October 1997. Seeding with a pasture mix took place in the Spring of 1998. An Operation & Maintenance Contract was awarded March 1999. The leachate/gas wells associated with LF 6 and monitoring wells 11-540-M and 11-541-M were abandoned. Landfill gas monitoring wells were installed between LF 6 and Buildings 1416, 1455, 1454, and 1457.

LF 7 was operated from 1952 to 1962 and received general refuse from Areas A and B. It was a trench and cover operation and in an area about 18 acres in size. Areas of differential settlement are visible across the parking lot and the horse stable complex. The hay barns in the stable complex are sagging and shifting because of the differential settlement. Most of LF 7 is now used as pasture. Refuse is occasionally uncovered during disking and planting operations, indicating only a thin soil cover above the landfill itself. The west side of the landfill has steep 10- to 20-foot slopes where general trash, such as, metal pieces, old rubber hoses and concrete rubble were pushed over the edges. Several 55-gallon drums have been exposed as a result of settlement and erosion in the area.

Because LF 7 is a characteristic landfill, the presumptive remedies as identified in the Basewide Removal Action Plan for Landfill Capping were evaluated as appropriate remedial actions for LF 7. The presumptive remedy for LF 7 is surface debris removal, a native soil and vegetative cover over a partial area of LF 7, and surface water run-on/run-off controls. The native soil and vegetative cover will consist of 18 inches of common soil and 6 inches of topsoil. Construction of this cover took place in September 1997 through December 1997. Seeding with a pasture mix took place in the Spring of 1998. The leachate/gas wells associated with LF 7 and monitoring well 11-014-M were abandoned. Landfill gas monitoring wells were installed between LF 7 and Buildings 896, 894, and 893. These wells are being monitored for methane gas under the BMP. An Operation and Maintenance contract for LFs 6 & 7 was awarded in March 1999 to ensure that the soil covers and drainage systems are kept in tact.

Landfills 3, 4, 6, & 7 are included in the 1998 ROD for 41 No Action Sites.

An area of scattered drums, now referred to as the drum staging area, reportedly was located northwest of LF 7. During a basewide drum removal project in November 1990, 125 drums were recovered near LF 7. Most of the drums were found in or directly adjacent to the northwestern edge of LF 7, now referred to as the drum disposal area. Of the 125 drums recovered, 96 were empty. The contents of the remaining 29 drums were sampled and, based on analytical results, all were disposed of at a hazardous waste landfill.

The boundaries of the drum staging area are approximate (Weston 1989 and others). No evidence of drums in the drum staging area was encountered during the RI.

Landfill 5 (LF 5)

Landfill 5 is located in the Twin Lakes area between Riverview and Prairie Roads and covers about 23 acres. It lies within the Mad River 100-year floodplain. The landfill was partially fenced with the main entrance controlled by a locked gate.

Various operations have taken place at this landfill. It was initially operated during the 1940s as a lumber reclamation area, where scrap lumber was accumulated and sold to the public. It

was then a surface dump operation accepting general residential refuse. The landfill was also the site of a waste petroleum handling operation where two halves of a 10,000-gallon tank were used to burn flammable petroleum waste products. In addition, a 15,000-gallon UST was used for 15 to 20 years to collect waste oil, and a 10,000-gallon horizontal steel tank, modified to act as an oil/water separator, was used in the early 1970s'. An off-Base waste oil relaimer serviced the UST. In 1978 the UST was sold and the waste oil reclamation operation was discontinued. Fly ash from the Base's heating plants, vegetation wastes from landscaping activities, and debris from construction were disposed of before landfill operations ceased in May 1991, when the Base contracted the off-site disposal of fly ash.

A contaminant plume of VOCs in groundwater has been identified in various studies conducted along the base boundary near LF 5 (ES 1992; Battelle 1992; Weston, 1989). The contaminant plume, primarily comprised of trichloroethene (TCE), is migrating off base. WPAFB is currently operating a groundwater extraction system to prevent, to the extent practicable, the migration of contaminated groundwater across the base boundary.

Results of previous investigations suggested that a VOC source may be located in the southwest portion of LF5. A Remedial Investigation (RI) was conducted in 1993 to identify, if possible, the source of groundwater contamination. Results of the RI indicate that a point source of VOCs is not located in the southwest portion of LF 5. Also, based on the discovery of a Base map from 1945 designating "Landfill 5 Extension" in the area, it was perceived that LF 5 may extend to the northeast. However, during the RI investigation it was determined that this area was not utilized as part of the landfill.

Landfill 5 was capped under the Ohio Solid Waste regulations. The cap consists of four primary layers in descending order from the top of the cap:

- Vegetative Layer: 6 inches of topsoil and 30 inches of common soil for a total depth of 3 feet
- Drainage Layer: provides drainage for infiltrating precipitation
- Low Permeability Layer: provides a barrier to infiltrating precipitation
- Gas collection Layer: facilitates collection and venting of landfill-generated gases to the atmosphere

The cap was completed in August 1996. This site is included in the 1998 ROD for 41 No Action Sites. An Operation & Maintenance Contract was awarded March 1999.

Landfill 8 (LF 8)

Landfill 8 was operated from 1947 until the early 1970s' and received wastes from Area B. The landfill encompasses about 11 acres and contains about 187,000 cubic yards of waste. LF 8 is enclosed by fencing and the area is posted with "Off Limits" signs.

Based on interview information, four distinct operations were located at this site:

- general refuse disposal;
- toxic and hazardous chemical disposal;
- acid neutralization; and
- fire training activities north of Building 821.

General refuse was disposed of in a trench and cover operation. The trenches are oriented north to south.

Toxic and hazardous chemicals were disposed of in trenches segregated within the general refuse disposal area. The trenches were adjacent to Building 821, and all non-acid chemical wastes generated within Area B were disposed of in them. The typical operating procedure was to throw the individual glass bottles containing chemicals into the trenches to try to break them.

In addition to the toxic and hazardous chemical disposal area, an acid neutralization area was operated on the southern portion of the site. That area included a number of small tanks into which acid was poured from small containers and bottles, and lime was added to neutralize the liquid. After neutralization, the liquid was discharged to the ground and allowed to run off to the nearest stream.

Evidence of a lead disposal area was also found.

During the document review process, the Base found photographic evidence of fire training activities that were conducted as early as 1948 and continued until the early 1960s.

The area around LF 8 displays relief that is the result of underlying glacial deposits, having been dissected by natural drainage. A northerly flowing creek and its tributaries that join Hebble Creek about 0.5 mile north of the site drain this area.

The natural topography of the area has been modified extensively through waste disposal at LF 8 and the construction of Base housing in the area and bunkers for ordnance storage at numerous locations in the valley between the landfills. From 1971 to 1973, the areas around LFs 8 and 10 were developed for Base housing, and the surface of LF 8 was developed as a recreational area. The valley between the two landfills, which contained the bunker access road, was closed to vehicular traffic and was developed as a wooded park with footpath access to both landfills. Construction of the bunkers required land grading, road building, and

the installation of culverts. The bunkers have since been removed, but their locations were found on topographic maps and aerial photographs.

During operation of LF 8, general Base refuse containing unknown quantities of oily wastes, organic and inorganic chemicals, and hospital wastes were reportedly disposed of at the site. About 36,000 gallons of chemical wastes were disposed of in LF 8 during its period of operation from 1955 to 1962. Drums were reportedly observed on the surface of LF 8.

Results of the OU1 RI indicate that LF 8 is a continuing source of contamination and that the contaminants are dispersed throughout the landfill. The concentrations of contaminants in any one location are not indicative of any definitive contaminant sources, such as buried containers. Low levels of some contamination were identified in groundwater in the valley between LFs 8 and 10 and in random locations around the perimeter of the landfills. Releases of contaminants from LF 8 are primarily associated with the production of leachate from refuse and soil. Leachate production is primarily the result of precipitation percolating through the landfill, but groundwater moving laterally through LF 8 is an additional contributor.

Remediation at LF 8 began in September 1994 and capping was completed in Oct 1996. The action was taken in accordance with the Record of Decision for the site and is essentially a RCRA Subtitle D sanitary landfill closure. LF 8 was capped with an impermeable layer. Landfill gases are collected using a system of extraction wells and treated on-site. Leachate is collected by a system of extraction wells and discharged to the City of Fairborn POTW for treatment.

Landfill 9 (LF 9)

Landfill 9, also known as Sandhill, was operated between 1962 and 1964. Pits A and B were used as sources for sand and gravel and later may have been filled with construction debris. The pits cover about 14.5 acres. Pits A & B were fenced in June 1994 because of their location and the potential for direct contact. Geophysical and trenching surveys suggest that buried debris is not present in Pits A & B.

The actual landfill, as determined by geophysical surveys during the preliminary RI and personal interviews conducted in November 1994, is located 1/4 mile north of Pit A. This is now known as Pit C.

Field investigations to determine contaminants present at Pit C were conducted in the fall of 1995. Semi-volatile compounds and pesticides were detected in minor concentrations (< 180 µg/kg and < 74 µg/kg, respectively) in the surface soils. Sediment samples contained low levels of volatile organic compounds (highest concentration, TCE at 210µg/kg) and semi-volatile compounds (highest concentration, fluoranthene at 160 µg/kg).

Because LF 9 (Pit C) is a characteristic landfill, the presumptive remedies as identified in the Basewide Removal Action Plan for Landfill Capping were evaluated as appropriate remedial actions for LF 9 (Pit C). The presumptive remedy for LF 9 (Pit C) is a native soil and vegetative cover and surface water run-on/run-off controls. The native soil and vegetative cover will consist of 18 inches of common soil and 6 inches of topsoil. Construction began late October 1997 and was completed by June 1998. This site is included in the 1998 ROD for 41 No Action Sites. An Operation & Maintenance Contract was awarded March 1999.

Landfill 10 (LF 10)

Landfill 10 is located in the northeastern portion of Area B adjacent to LF 8 and covers an area of about 8 acres. LF 10 is enclosed by fencing and the area is posted with "Off Limit" signs. Past disposal activities and the nature of the environmental problems of LFs 8 and 10 are very similar.

LF 10 was operated from 1965 until 1970 and received waste from all areas of the Base. Both general refuse and hazardous materials were disposed at the landfill. General refuse was disposed of by a trench and cover operation; trenches in the northern portion of the site are oriented north to south, and trenches on the southern portion are oriented east to west.

The RI found no evidence of contaminant disposal in the trenches reportedly located east of the landfill in the residential area.

During the operation of LF 10, general Base refuse containing unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes were reportedly disposed of at the site. Actual quantities, types, physical states, hazardous constituents, and pollutants disposed of are unknown.

The RI found that LF 10 is a continuing source of contamination and that the contaminants are dispersed throughout the landfill. Concentrations of contaminants in any one location are not indicative of any definitive contaminant sources, such as buried containers. Low concentrations of some contaminants were identified in groundwater in the valley between LFs 8 and 10 and in random locations around the perimeter of the landfills. There were, however, elevated concentrations of Arochlor 1254 in three shallow soil locations and 4,4-DDT in two shallow soil locations on LF 10. Releases of contaminants from the landfill are primarily associated with the production of leachate from refuse and soil. Leachate production is primarily the result of precipitation percolating through the landfill. Migration of contaminants beyond the boundary of the landfill is limited.

The remediation work at LF 10 that began in September 1994 was completed in October 1996. The action was taken in accordance with the Record of Decision for the site and is essentially a RCRA Subtitle D sanitary landfill closure. LF 10 was capped with an impermeable layer. Landfill gases are collected using a system of extraction wells and treated

on-site. Leachate is collected by a system of extraction wells and discharged to the City of Fairborn POTW for treatment. An alternative water supply (City of Fairborn) was provided for residents on National and Zink Roads the summer of 1994. The Fall of 1994 the residents wells were abandoned.

Landfill 11 (LF 11)

Landfill 11 was used for general refuse disposal from 1968 to 1977. It is located over an old channel of the Mad River and covers about 16 acres. Sections of LF 11 are reportedly up to 50 feet deep. Uncovered large refuse including concrete pieces, cut metal storage tanks and several empty drums were reported along the base of the landfill's side slopes. The drums were removed during a removal project in 1990. The side slopes are wooded with a mixture of small to medium trees and shrubs.

The site was initially operated as a trench and cover activity and later as a ramp dump and compaction procedure with daily cover. Various chemical wastes were reportedly disposed of in LF 11, and Base personnel reported fires starting during the compaction procedure. General refuse containing unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes were reportedly disposed of at this site. Actual quantities, types, physical states, hazardous constituents, and pollutants disposed of are unknown. The RI conducted in 1993 confirmed that LF 11 contained characteristic landfill debris and trench and cover cells.

The OU3 RI was completed in December 1995. The results of the baseline risk assessment indicate a potential risk to human health within EPA target levels (1×10^{-6} to 1×10^{-4}) from soil containing beryllium, benzo[a]pyrene, dibenzo[a,h] anthracene, and 2,3,7,8-TCDD at LF11. The baseline ecological risk assessment identified a potential risk to small predators (e.g. short-tailed shrews and swallows) and to the Indiana bat, a threatened and endangered species, from zinc in surface soils (≤ 2 feet) at LF 11. Detected concentrations of selenium, vanadium, mercury, cadmium and chromium in landfill soils also pose a risk to the Indiana bat.

Because LF 11 is a characteristic municipal sanitary landfill, the presumptive remedies as identified in the Basewide Removal Action Plan was evaluated as an appropriate remedial action for LF 11. The presumptive remedy for LF 11 was surface debris removal, native soil and vegetative cover, surface water run-on/run-off controls, and institutional controls. The native soil and vegetative cover consists of 18 inches of common soil and 6 inches of topsoil. Fieldwork was completed in June 1997. This site is included in the 1998 ROD for 41 No Action Sites. An Operation & Maintenance Contract was awarded March 1999.

Landfill 12 (LF 12)

Landfill 12 was operated from 1968 to 1973. It is located in the western portion of Area C near the Mad River. The landfill was fenced and covered about 0.27 acres.

LF 12 initially was used for chemical disposal, acid neutralization, and hazardous material storage. Trenches about 2 feet wide by 3 feet deep were used for disposal. Acids were neutralized using the same procedures used at LFs 8 and 10, and neutralized wastes were allowed to percolate into the soil.

The landfill received chemicals originating from research laboratories in Area B as well as chemicals from Areas A and C. The chemical waste removed from the chemical disposal trench at LF 10 during the construction of military family housing units was reportedly disposed of in LF 12. During the late 1970s, LF 12 was used as a storage place for waste chemicals, including materials contaminated with the "herbicide orange." These materials were reportedly not opened within the storage area and were later removed and disposed of offsite. Exact quantities, type, physical state, hazardous constituents, and pollutants disposed of at the landfill were not known. Drums were removed during a removal project in 1990.

The RI conducted in 1993 confirmed that LF 12 is a shallow-trench burial site containing numerous containers and glass vials that are partially filled with unknown liquid chemicals. The OU3 RI was completed in December 1995. Because of the site's small size and the potential threat posed by future releases, an engineering evaluation cost analysis (EE/CA) was prepared along with a design for excavation and offsite disposal.

Excavation began on 10 October 1997. A total of 1,946 containers and 31 compressed gas cylinders were found. The containers were laboratory type bottles in various states of decay. The chemicals were characterized on-site, bulked according to compatibility and segregated by hazardous waste category (i.e. flammable liquid, flammable solid, radioactive, toxics, etc.) for off-site disposal. Disposal acceptance occurred in January and February 1998, with transportation and final off-site disposal occurring in February and March 1998. This site is included in the 1998 ROD for 41 No Action Sites.

Landfill 13 (LF 13)

Landfill 13 covers 4 to 5 acres and was operated as an open dumpsite for about 20 years. The Base's historic aerial photographs show that the landfill was active from 1922 to 1940. The duration of the operation and the nature of the disposal are not clearly known. Refuse and wastes appear to have been placed in direct contact with groundwater.

Airplane parts and engine parts were reportedly disposed of at the site per discussions with former Base personnel. The landfill appeared to be almost completely filled in a 1940 photograph.

The site was investigated as part of the OU10 RI. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Earthfill Disposal Zone 1, EFDZ 1 (LF 14)

Earthfill Disposal Zone 1 (EFDZ 1), is one of eight earthfill disposal sites used by the Base in the 1940s for disposal of earthfill. This site is in the southwest corner of Area B near LF 2.

The site is located east of the original location of Harshman Road, which now crosses it. The original fill material at EFDZ 1 was probably disturbed and redistributed during relocation of Harshman Road.

The historical drawing identifying the site indicates that about 80,000 cubic yards of fill material was to be deposited there during the 1940s. The site covers an area of about 23 acres.

There is no indication that hazardous materials were disposed of at the site. However, materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

The OU6 RI, which addressed LF 1, LF 2 and EFDZ 1, was conducted in 1993–94. A previous investigation of EFDZ 1 was conducted in 1992. EFDZ 1 consists of three areas: two of which are on-base (EFDZ1 A and EFDZ1 B) and one which is off-base (EFDZ1 C). EFDZ1 C is a community park maintained by the City of Riverside. It is roughly 4 acres in size with a maintained, grassy topsoil cover. No fill materials were encountered during drilling operations in the Community Park. The presence of polyaromatic hydrocarbons in EFDZ1 C surface soils is likely influenced by the asphalt walking path in the community park and automobile exhaust and road runoff from Harshman Road, a heavily traveled thoroughfare adjacent to the park. There is no evidence of groundwater contamination associated with this site.

Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Earthfill Disposal Zone 2, EFDZ 2 (LF 15)

Earthfill Disposal Zone 2 (EFDZ 2), is in the southwest corner of Area B west of M Street.

The historical drawing identifying the site indicates that about 19,000 cubic yards of fill material were to be deposited during the 1940s (ES 1988). The site covers an area of about 2 acres.

There is no indication that hazardous materials were disposed of at the site. However, materials similar to those disposed of at other landfills on the Base may have been transported to this site including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

Sampling was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 3, EFDZ 3 (LF 16)

The historical drawing identifying EFDZ 3 site indicates about 35,000 cubic yards of fill material were to be deposited during the 1940s (ES 1988). It is about 4 acres and is located in the southwest corner of Area B, west of M Street and south of the Accelerated Runway.

There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes. Initial groundwater long-term monitoring requirements were conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 4, EFDZ 4 (LF 17)

Earthfill Disposal Zone 4 (EFDZ 4), is in the southeast corner of Area B, south of the Accelerated Runway and west of EFDZ 7. The historical drawing identifying the site indicates that 355,000 cubic yards of fill material were to be deposited during the 1940s (ES 1988). The estimated size of the site is 35 acres. After placement of the fill, 13th Street was constructed over the fill area.There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes. Sampling was conducted as part of the OU9 RI.

Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 5, EFDZ 5 (LF 18)

Landfill 18, Earthfill Disposal Zone 5 (EFDZ 5), is in the southeast corner of Area B, between Q Street and the installation boundary along National Road. Its estimated size is 9 acres. The historical drawing identifying this site indicates that 10,000 cubic yards of fill material were to be deposited during the 1940s (ES 1988).

A historical aerial photograph shows that a vehicle storage area was once located in the northeast corner of the site. Exposed scrap metal and building foundation waste have also been observed. There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes. Sampling was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 6, EFDZ 6 (LF 19)

Earthfill Disposal Zone 6 (EFDZ 6), is in the southeast corner of Area B, southeast of the corner of R Street and Fifth Street. Building 453 was constructed since the 1940s when the area was used as a disposal site. Its estimated size is 6 acres. The historical drawing identifying the site indicates that 5,000 cubic yards of fill material were to be deposited during the 1940s (ES 1988).

An undated, historical aerial photograph depicting the site shows barracks over the entire area.

There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

Initial long-term groundwater monitoring was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 7, EFDZ 7 (LF 20)

Earthfill Disposal Zone 7 (EFDZ 7), is in the southeast corner of Area B, along M Street, south of the Accelerated Runway and extending south of Loop Road. The site is a long narrow strip about 5 acres in size. After possible placement of fill in this area, 13th Street was constructed and now crosses the site; portions of the area not occupied by streets are covered with grass.

There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

Initial long-term groundwater monitoring was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 8, EFDZ 8 (LF 21)

Earthfill Disposal Zone 8 (EFDZ 8), is located in the southeast corner of Area B on the east side of M Street north of the Recreational Vehicle Storage Area. Its estimated size is 9 acres.

This site was not included on the historical drawing which identified the other seven earthfill disposal sites (ES, 1988). The drawing, which identifies this site notes that "The purpose of this drawing is to provide new finished contour grades in the event this area is used for the disposal of waste earth excavation," but does not indicate the quantity of material placed in this area.

An undated, historical aerial photograph of the site depicts several areas of bare ground with narrow roads.

There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

Initial long-term groundwater monitoring was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 9, EFDZ 9 (LF 22)

Earthfill Disposal Zone 9 (EFDZ 9), covers about 13 acres in Area B between Buildings 470 and 620. It was a hardfill area for Base maintenance activities. EFDZ 9 was identified as a potential waste site during review of aerial photographs dating from the early to mid 1950s. It was suspected that filling activities were conducted before controlled disposal practices were initiated. A site visit conducted in November 1989 confirmed the presence of construction debris from past backfilling activities. The types of debris disposed of include fill dirt, concrete, asphalt, and brush.

There is no indication that hazardous materials were disposed of at the site. Materials similar to those disposed of at other landfills on the Base may have been transported to the site, including unknown quantities of oily wastes, solvents, organic and inorganic chemicals, and hospital wastes.

Initial long-term groundwater monitoring was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 10, EFDZ 10 (LF 23)

Earthfill Disposal Zone 10 (EFDZ 10), is a 15-acre, partially wooded site in Area B and is located southwest of Building 620. EFDZ 10 was discovered during the November 1988 review of aerial photographs dating from the early to mid 1950s. Surface evidence indicates past backfilling activities and the presence of construction and demolition debris, including broken concrete, asphalt, and lumber products. Base Fire Department personnel indicated that the site may contain radioactive material, because a storage building used in the late 1960s and early 1970s for small quantities of radioactive material stands within the fill area. In December 1988, portions of the site were randomly surveyed for elevated external gamma radiation using an Eberline ESP2 meter with a Bicron Fiddler probe. Results showed no levels of gamma radiation above 200 to 300 counts per minute, which is the instrument's background level. No records of site activities or dates to confirm the presence of contamination are available.

Initial long-term groundwater monitoring was conducted as part of the OU9 RI. Based on existing conditions it has been determined that no significant risk exists and no further action

is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Earthfill Disposal Zone 11, EFDZ 11 (LF 24)

Earthfill Disposal Zone 11 (EFDZ 11), is a rectangular site in Areas A and C along both sides of Riverview Road. It is near the Boy Scout Camp and about 200 feet from the middle of the northwestern boundary of Area C.

EFDZ 11 was identified during a review of civil engineering maps in December 1988. Construction debris associated with a Patterson Field runway project in the early 1940s is expected to be present. An area adjacent to the site contains what has been described as "organic muck" on old Base maps. A 25,000-gallon above ground tank may have been situated in the area at one time, but its exact location is unknown. The site is generally flat but the ground is rough, uneven, and covered with grass and small trees. The potential for contamination exists because of the possible uncontrolled disposal of hazardous materials within the fill. Records indicating the actual extent of the site do not exist.

During the OU3 RI, groundwater samples were collected as a part of the long-term monitoring program established under the site inspection. Data obtained from two rounds of sampling identified no compounds at concentrations above OU3 background levels. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Earthfill Disposal Zone 12, EFDZ 12 (LF 25)

Earthfill Disposal Zone 12 (EFDZ 12), is an irregularly shaped area in Areas A and C, south of Buildings 4070 and 4066 and about 1,000 feet south of the middle of the northwestern boundary of Area C.

During a review of civil engineering maps in December 1988, EFDZ 12 was identified as an old gravel pit. It is suspected that construction debris associated with a Patterson Field runway project in the early 1940s was disposed of at the site. The gravel pit no longer exists, and the site is generally flat but the ground is rough, uneven, and covered with grass and small trees. No evidence of construction material is visible on the surface. The site is adjacent to an area where large quantities of organic muck were reported during the construction of the runways at Patterson Field.

Records showing the extent of the disposal activities or the type of material placed in the area are unavailable, and there is no information concerning the composition of the organic muck adjacent to the site. Methods of waste disposal used during the 1940s create a potential for hazardous materials to be present within the fill area.

During the OU3 RI, groundwater samples were collected as a part of the long-term monitoring program established under the site inspection. Data obtained from two rounds of sampling identified no contaminants at concentrations above OU3 background levels. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Spill Site 1, SP 1 (SS 26) and Fire Training Areas 3, FTA 3 (FT 37) and 4, FTA 4 (FT 38)

Fire training exercises were conducted at FTAs 3 and 4 between 1960 and 1980. Contaminated fuel was stored in a tank north of the site. The fuel was applied directly to the ground and ignited. A 1,000- to 2,000-gallon fuel spill (SS 1) occurred north of FTA 3 in 1972. The fuel was reportedly intercepted before it reached the Mad River.

A soil gas survey was performed at SS 1 and FTAs 3 and 4 from December 1989 through January 1990. The results indicate TPH contamination consisting of low levels of BTEX and TPH fuel components.

In October 1992, fieldwork commenced for the OU3 RI. The risk assessment for OU3 indicated that the sites pose no unacceptable risk. Therefore, no further action is required for these sites. These sites are included in the 1996 ROD for 21 No Action Sites.

Spill Sites 2, SP 2 (SS 27) and 3, SP 3 (SS 28)

The petroleum, oil, lubricants (POL) facility where SP 2 and SP 3 occurred, has been in operation at its present location since the mid 1940s. During that time, numerous leaks and spills occurred as evidenced by free phase petroleum product observed in several area monitoring wells.

In February 1992, WPAFB initiated the Free Product Recovery Project that consists of a groundwater depressant pump and treatment system in conjunction with a floating hydrocarbon skimmer pump. The Free Product Recovery System began operation in May 1993; however, because of iron buildup, the system automatically shut down. The system resumed operation in October 1993. The system continued operation until November 1995 when the vapor carbon filters caught fire and burnt down the system. The regulatory

agencies agreed that, due to the lack of free product recovered, the system would not be rebuilt.

The spill sites were investigated as part of the OU2 RI. Because BTEX contamination is present in the soils and groundwater, an FS was conducted. The initial findings of the FS are that natural degradation of the BTEX contamination is occurring and that, with abandonment of existing underground fuel lines; the contamination should naturally degrade within approximately 8 years.

All underground piping within the tank dike area was abandoned and replaced with aboveground piping in 1996. The dikes were sealed with a high-density polyethylene (HDPE) liner.

In September 1997 a ROD was signed. The selected remedy is in-situ biodegradation of contaminants in subsurface soil, natural attenuation of contaminants in groundwater, institutional controls and subsurface soil and groundwater monitoring. Long-term monitoring of the BTEX plume will be addressed as part of the BMP.

Two Hydroskim units were installed at Spill Site 2 in November 1996. They continue to operate. The contractor has been tasked with taking a round of product measurements lasting a year. Those measurements ended in February 1997 and 88 ABW/EMR staff continues the product measurements and recordation of the data.

Spill Site 4, SP 4 (SS 29)

Spill Site 4 (SS 4) is in the northeast section of Area C. It is adjacent to the west side of Building 172, about 1,500 feet west of the base boundary at Gate 35C.

SS 4 was discovered in March 1988 during construction of a water supply line on the west side of Building 172. Gasoline odors were detected, and so two soil samples were taken and analyzed for VOCs and lead. A UST was previously located at the site, and a spill or leak from the UST is presumed to be the source of the petroleum contamination. The UST was reportedly removed in 1983, as confirmed by excavations; however, steel piping associated with the UST is still in place. The UST was used as an emergency gasoline supply tank for water pumping equipment contained in the building. No information exists on the size or construction specifications of the tank or system. The UST contained leaded gasoline, but no inventory or operational records exist.

The soil excavated for the water supply line was removed and uncontaminated material was placed in the excavation. The site was closed, and no further action is proposed for the site. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 5, SP 5 (SS 30)
UST at Fuels Management Laboratory Building 70

Spent fuels and solvents were flushed down a sink in Building 70, Area B, to an oil/water separator and scrap tank. It was discovered in 1988 that the scrap tank was inadvertently removed when several other USTs were removed from the area in March 1985. When the area was excavated to verify conditions at the site, contaminated soil and fuel odor was detected to 12 feet below ground surface. The pipe leading to the tank was not capped, but surrounding soil was not discolored. Further investigation showed that approximately 20 to 50 gallons of liquid had spilled while the tank was being removed. Much of the fuel was recovered, but contaminated soils were not excavated.

A soil vapor survey identified potential pathways of TPH. Confirmatory soil borings indicated that petroleum contamination in soils and groundwater extended considerably downgradient from the site. Two wells were noted to have free-product on the water table. This was verified by the OU8 Remedial Investigation, completed in January 1997. A petroleum recovery method known as bioslurping was attempted at one of the locations. A small-scale unit was utilized to perform a pilot test for the application at the site, and was considered successful in removing free-product. Additional monitoring wells were installed at another nearby location as part of a predesign investigation for a bioslurper and bioventing removal action. A trailer mounted bioslurper unit was designed and a treatability study was initiated in March 1997 to address the down gradient area of petroleum contamination. A series of shallow piezometers and wells were utilized in order to test the effectiveness of the removal action. The bioslurper operated until January 1998. BTEX compounds were not detected in groundwater at the site, and none appeared to be drawn in by the system. Floating product was observed, and removed by the bioslurper. This site is proposed for no further remedial action. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 6, SP 6 (SS 31)

Spill Site 6 was discovered in 1985 when an electrical transformer was found to be leaking oil, containing PCB. About 100 to 200 gallons of oil is thought to have spilled at the site.

In 1986 the transformer and supporting concrete pad were removed. Site soils were removed from an area about 20 by 26 feet to a depth of 4-½ feet. The excavated soils were disposed of off-base as hazardous waste. Soil samples taken from the bottom of the excavation showed PCB concentrations as high as 5,000 ppm. Plastic sheeting was laid over the excavation.

Additional soil was removed in 1987. Up to 4 feet of soil was removed from an area about 20 by 31 feet. Soil was removed to a depth of 7 feet over an area 6 by 17 feet within the shallower excavation. The excavated soils were disposed of off-base as hazardous waste. Soil samples taken at depths between 7 and 10 feet showed PCB concentrations as high as 20,000 ppm. The excavation was backfilled with sand and gravel.

In 1988 an investigation was conducted to determine the vertical and lateral extent of PCB contamination. Thirteen soil borings were drilled, and 37 soil samples were analyzed for PCBs. PCB contamination ranging from 42 to 12,000 ppm was found at depths of 5 to 21 feet with the greatest concentrations found between 13 and 21 feet. The lateral extent of PCB contamination was confined to an area roughly 10 feet square.

An additional investigation was conducted in 1990 to better define the area of PCB contamination before cleanup. Seven soil borings were drilled, 24 soil samples were field screened, and five soil samples were analyzed for PCBs. PCB contamination as high as 11,000 ppm was found at depths up to 24 feet. The investigation concluded that PCB contamination probably extended vertically to a depth of about 30 feet, where a confining clay layer exists. The U.S. Army Corps of Engineers recommended that an area roughly 8 feet square be excavated down to the clay layer. An area of PCB contamination roughly 5 feet square adjacent to the deep excavation would also be excavated to a depth of 7 feet under the Corps's recommendations.

In September 1991, WPAFB awarded a contract to excavate the PCB contaminated soils per the Corps's recommendations. Fieldwork was approved through the Ohio EPA and completed between March and May 1992. Roughly 120 cubic yards of PCB-contaminated soils were excavated from SP 6 and disposed at Model City Landfill, New York. Verification samples taken from the sidewalls and bottom of the finished excavation indicated that PCB contamination was less than 15 ppm, which is, below the remediation goal of 50 ppm. No further action is proposed for this site. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 7, SP 7 (SS 32)Tank Farm F

This site is an active fuel storage area consisting of 12 USTs (four 12,000-gallon tanks and eight 20,000-gallon tanks). Twelve 25,000-gallon tanks were removed and the site was remediated under a FY 91/92 MILCON project, and twelve new fiberglass tanks were installed. Site investigation and corrective action were performed under the UST program.

Five million dollars of MIL/CON funds was dedicated to the removal and replacement of the tanks, and an additional $1 million in environmental compliance funds was dedicated to contaminated soil removal. *Tank Removal and Site Disposition* reports for Tank Farms B

and F were accepted for closure by the State Fire Marshal (SFM) in June 1993. No further action is proposed for this site. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 8, SP 8 (SS 33)

Spill Site 8 (SP 8), located at Substation G, is immediately south of Building 167 in Area C and north of the Base boundary fence along State Route 444A.

The Corps of Engineers discovered the release of PCB-contaminated oil from two leaking transformers at Building 167, Area C on April 15, 1988, during the removal of the transformers as part of a MIL/CON Project. The transformers were sampled and found to contain PCB oil in concentrations ranging from 67 to 487 ppm.

Between August 29 and September 2, 1988, 26 soil samples were obtained from 6 soil borings at SS 8 and analyzed for PCB contamination. The purpose of the study was to ascertain the vertical and lateral extent of the PCB contamination and make recommendations for further action. The project report concluded that PCB contamination above 10 ppm was confined to an area 6 feet square and 8 feet deep.

On June 4, 1990, the Corps of Engineers began a PCB removal action at SP 8. The Corps was tasked with removing PCB-contaminated soil until a level of less than 10 ppm was reached. A total of 15 cubic yards of soil was excavated, and five verification samples were collected and analyzed. PCB levels were below 3 ppm in all samples. No further action is proposed for this site. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 9, SP 9 (SS 34)
Tank Farm B

In April 1989, fuel odors were detected during the installation of four new USTs. Four abandoned underground fuel lines were discovered. The lines were capped in the 1970s. This finding resulted in a Notice of Violation (NOV) from the State Fire Marshall (SFM). Mineral spirit odors were detected in a drainage sump in Building 253 during a site visit in 1989 by SFM and U.S. EPA. SP 9 was expanded to include the entire Tank Farm B.

Site investigation and corrective action were performed under the UST program. The SFM closed out the NOV in April 1993. No further action is proposed for this site. This site is included in the 1998 ROD for 41 No Action Sites.

Fire Training Area 1, FTA 1 (FT 35)

FTA 1 was operated from 1950 to 1955. Contaminated fuels were burned in a dirt pit with a surrounding earthen dike after first saturating the ground with water to reduce infiltration.

Groundwater wells around the site perimeter indicate sources of low-level THC and VOC contamination. Elevated levels of aluminum and iron were detected in one sample. These levels do not pose an unacceptable risk at this site. Therefore no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Fire Training Areas 2, FTA 2 (FT 36) and 5, FTA 5 (FT 39)

Fire Training Areas 2 and 5 are located in Area C near the west end of the runway, north of Riverview Road and adjacent to the northeast end of LF 11. The sites are bordered on the northwest by the Mad River and cover about 18 acres.

FTA 2 was operated from 1955 to 1969. During active use of FTA 2, fuels were ignited and extinguished as part of fire training exercises. The fuels used for training may have been contaminated with water, oily wastes, hydrocarbon solvents, halogenated solvents, and leaded gasoline. Actual fuel quantities and types of contaminants are not known. FTA 5 was put in service in 1981. Operations at FTA 5 were suspended for several months at various times between 1986 and the present. Only clean fuels were reportedly used for FTA 5.

Aerial photographs indicate that FTA 2 consists of about 13 individual burn pits. Fire training exercises were conducted there in dirt pits constructed with an earthen berm to retain water. Contaminated fuels were ignited, and fire-fighting foam was used to extinguish the fires. The pits were saturated with water before the burn to reduce infiltration and loss of fuel. The fuel was then ignited and extinguished as part of the fire training exercise.

Unlike other WPAFB fire training areas, only uncontaminated JP-4 jet fuel has been used in exercises conducted at FTA 5. The area has a concrete lining designed to contain all petroleum products used in training. During the exercises, the concrete pit is filled with water and fuel is added to its surface and ignited. Extinguished agents are then applied to extinguish the fire. Two training exercises are held quarterly for Base Fire Department personnel.

On December 30, 1986, about 2,700 gallons of jet fuel was released from a tank used at FTA 5 to store jet fuel for training exercises. This fuel spill was addressed under a bioremediation project conducted from 1987 to 1989 and a bioventing pilot-project conducted in 1994.

The OU3 RI, completed in December 1994, showed no unacceptable risk associated with the site and therefore, no further action is required. The underground storage tanks were

removed in 1996 and were accepted for closure by the State Fire Marshall. These sites are included in the 1996 ROD for 21 No Action Sites. A new FTA was constructed adjacent to FTA 5 in 1996 and uses propane as a fuel source.

Central Heating Plant 1, CHP 1 (OT 40)

Central Heating Plant 1 (CHP 1) contained seven coal-fired boilers in Area B. The heating plant began operation in 1930 and was shut down in 1980. While in operation, a coal pile was stored within a concrete barrier adjacent to CHP 1. As part of a heating plant consolidation, the Base closed CHPs 1, 2, and 3, while expanding CHPs 4 and 5. Total Base heating needs are now met by two central heating plants.

Based upon the Phase II data, no further action is proposed for this site. This site is included in the 1998 ROD for 41 No Action Sites.

Central Heating Plant 2, CHP 2 (OT 41)

Central Heating Plant 2 (CHP 2) began operating between 1940 and 1945 and was shut down in 1980 as part of the base heating plant consolidation. The heating plant had a coal pile adjacent to it throughout its operation. Based on the review of the 1948 aerial photograph, the coal storage area of the heating plant was contained by a concrete berm.

CHP 2 is located in the southern corner of Area A and is in the general vicinity of the golf course. Skeel Avenue is adjacent to the site.

Based upon the Phase II data, no further action was proposed for this site.

This site was reopened under the OU4 Remedial Investigation as an addendum to the final OU4 RI Report that was approved in May 1995. Following the completion of the original OU4 RI and SSRAP and during the preparation of the OU4 Action Memorandum, evidence of a historic release of mercury was found at CHP 2, roughly 2,000 feet east of LFs 3 & 4. On January 18, 1996 while excavating a boiler blow-out tank adjacent to CHP 2 a 6-inch vitrified clay storm sewer pipe was excavated through. Globules of elemental mercury were observed in the sewer pipe. The sewer pipe, which was connected to floor drains within CHP 2, apparently discharged water to a 15-inch storm sewer southeast of the plant. The 15-inch sewer eventually feeds to an 84-inch reinforced concrete storm sewer that discharges to the unnamed tributary between LFs 4 & 6.

The Base Spill Response contractor cleaned up the elemental mercury and Base Civil Engineering capped the sewer lines and rerouted existing drains. The discovery of the mercury release at CHP 2 resulted in the need for further investigation.

An addendum to the OU4 RI/FS Site Specific Work Plan (SSWP) was prepared in early 1997. The mercury release was investigated in May and June 1997 in accordance with the approved SSWP addendum (CH2MHill 97). Field work consisted of smoke testing of storm/sanitary drains, dye testing, closed circuit television inspection of storm sewer, sanitary sewer sediment and aqueous sampling, CHP 2 sediment and wipe sampling, surface water and sediment sampling, soil and vadose zone sampling of excavated pit, and CHP-2 drain line cleaning and abandoning. Groundwater sampling was not necessary based on the review of the initial CHP 2 field program results. The maximum concentration of mercury inside of the floor drains of CHP 2 was 594 mg/kg. These floor drains were flushed and entombed with concrete. The 6-inch CIP storm pipe that parallels the south side of CHP 2 was excavated and sent off as hazardous waste. Mercury globules were observed in the 6-inch pipe, and the sediment inside the pipe was at concentrations between 0.15 mg/kg and 1,910 mg/kg. The RI Addendum Report recommended that no further action of the investigation or remediation be accomplished. This site is included in the 1998 ROD for 41 No Action Sites.

Central Heating Plant 3, CHP 3 (OT 42) and Battery Burial Site

Central Heating Plant 3 (CHP 3) is located along the northeast boundary of Area C. The plant began operation in either 1939 or 1940 and was shut down in 1980. Steam was generated using coal stored adjacent to CHP 3. The coal pile was reportedly contained in an area having a concrete pad. Runoff also drained to the storm drainage system. The coal pile was removed after CHP 3 was closed.

The plant currently collects condensate for use in CHP 4. The low-grade stream flashed from the condensate is used for building heat. Spent acid from the ion exchange process used for boiler feed water treatment is neutralized with soda ash and discharged into a storm sewer.

The Battery Burial Site was included as part of this site after the IRP Phase II, Stage 2 investigation because it apparently overlies some of the area used for the CHP 3 coal pile. The burial site contains dry-cell batteries. The site was investigated under the OU10 RI. No contamination was found associated with the heating plant's former coal pile. Lead was found at low levels in the battery burial area, but it does not warrant remedial action. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exists and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Central Heating Plant 4, CHP 4 (OT 43)

Central Heating Plant 4 (CHP 4) (Building 1240) is one of two central heating plants currently in operation. It contains three coal-fired boilers and one gas-fired boiler. It began operation in 1957 and was expanded to its present size in 1980.

CHP 4 is located along the southeastern boundary of Area C (Kitty Hawk Center) and has an adjacent coal pile contained in an area having a concrete pad and walls. Runoff from the coal storage area and other aqueous waste effluent streams are blended, clarified in a three-stage process and neutralized before discharge into the storm sewage system.

Groundwater issues are being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Central Heating Plant 5, CHP 5 (OT 44)

Central Heating Plant 5 (CHP 5) (Building 770) contains three coal-fired boilers and two gas-fired boilers. The plant began operation in 1956 and was expanded in 1980.

CHP 5 is located on the northern boundary of Area B on Kauffman Avenue. The adjacent coal pile is contained in an area having a concrete pad and 2-foot retaining walls.

Runoff from the coal storage area and other aqueous waste effluent streams are blended and clarified in a three-stage process before discharge into the storm drainage system. The project to upgrade the heating plant and to construct a neutralization system to treat coal pile runoff was completed in 1996.

Coal pile leachate and runoff streams were sampled as part of the OU9 RI. Subsequent to the OU9 RI field activities at the DRMO, utility line workers encountered unidentified vapors with a fuel oil odor, while repairing a communications line. This event initiated the DRMO Supplemental Investigation. The Supplemental Investigation was conducted in November 96. The most significant findings were semi-volatile compounds in the soils. Traces of PCBs and chlorinated herbicides and pesticides were detected. VOCs detected in groundwater were below respective MCLs. The results of the supplemental investigation were incorporated into the Remedial Investigation report and finalized in 1997. Based on the risk assessment, no further action is proposed for the interior of the DRMO facility, except for the areas of high PAH contamination. This contamination is thought to be the result of former coal activities at the site, and residual ash. Subsequent to the final RI, additional surface and near surface soil sampling was conducted to further delineate the extent of the PAH contamination. A portion of the yard denoted as the scrap metal pile area that was found to be the most contaminated. A removal action is proposed for the elevated PAHs in

this area, and along the adjacent fence line perimeter road. An EE/CA for the site was completed in June 1998. A total of 1344 tons of soil was removed in October 1998. This site is included in the 1998 ROD for 41 No Action Sites.

Burial Site 1, BS 1 (DP 45)

The area designated Burial Site 1 roughly encompasses two areas in the northeast portion of Area C used from 1966 to 1971 to dispose of fuel tank sludges containing tetraethyl lead. Gasoline storage tank cleaning generated about 700 gallons of lead-contaminated sludge each year. Review of historical aerial photographs helped to determine the locations of the two burial areas. Faint indications of trenching were found in recent aerial photographs, but they were later identified to be old garden plots. The trenches may contain the sludge burial pits, but the precise locations of the two areas were not identified during the Remedial Investigation. The buried sludges reportedly contained tetraethyl lead, other lead compounds, and oily waste.

The results of the OU2 RI found that contamination was not present to warrant any remedial actions, and it was decided that no further action need be taken at the site. This site is included in the 1996 ROD for 21 No Action Sites.

Burial Site 2, BS 2 (DP 46)

Burial Site 2, at the northwest corner of the Base, was in operation from 1971 to 1975. Sludge containing tetraethyl lead from bulk fuel storage tanks was deposited here. The systematic cleaning of the tanks generated about 700 gallons of sludge per year. It is not known if those waste products were placed in containers before disposal. A field investigation was conducted in early 1996. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and no further action is proposed. This site is included in the 1998 ROD for 41 No Action Sites.

Burial Site 3, BS 3 (DP 47)

Burial Site 3 (BS 3) is in Area B, adjacent to Gate 22B at the southeast boundary of Area B. Burial Site 3 was identified from a monthly Research and Development (R&D) report during the IRP Phase II Stage 2 investigation. The size and exact location of the site is unknown.

However, through communication with Base personnel and in reviewing air photos, the location of Burial Site 3 was determined with reasonable certainty, and it is suspected that Burial Site 3 may have been used to dispose of fuel sludge. Under the OU9 RI an additional well was installed and initial long-term groundwater monitoring was conducted. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Burial Site 4, BS 4 (DP 48)

Burial Site 4 is located in Areas A and C along a narrow, wooded stretch of Marl Road. BS 4 extends more than 2,000 feet along the north side of Marl Road and is about 30 to 40 feet wide. The site was identified on a Base map dated July 1945. At one time, a temporary chemical warfare structure believed to have been used for tear gas training was located near the site. Indications of past backfilling activities, including 10 to 15 drums scattered throughout the site area, were visible. The drums had no discernible marks or labels indicating their contents. Three were corroded and contained only remnants of the original contents. They were removed as part of the drum removal project in 1990. No information exists that would verify a chemical warfare structure was associated with the site.

The site was investigated under the 16 new IRP site investigations. Additional groundwater data was gathered during the OU 5 RI. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exists and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

BURIAL SITE 5 & 6 (DP 66 & 67)-Areas of Concern 1 & 2

Burial Sites 5 and 6 were identified as potential hazardous waste sites from aerial photos and interviews with retired Base personnel and neighbors. A record search was conducted in an attempt to determine the history of the sites. Burial Site 5 is evident on aerial photographs from 1944 to the present, appearing as an area of stressed vegetation approximately one acre in size adjacent to the east-west runway in area B. Burial Site 6 is located near the east end of the east-west runway. The area of investigation is adjacent to a former structure believed to have been an engine test facility of which only remnants and foundations remain. Former abandoned underground fuel storage tanks at the facility were removed in 1992.

The burial sites were characterized through the use of geophysics, soil gas, trenching, surface and subsurface soil sampling, and groundwater sampling. A Geoprobe or direct push

sampler was utilized to sample soils and groundwater. Two-inch monitoring wells or piezometers were also installed at the sites in order to measure groundwater levels and collect groundwater samples. Samples of soil gas, subsurface soil, and groundwater were analyzed for VOCs by an on-site close support laboratory. A portion of those samples, plus all surface soil samples and piezometer groundwater samples were analyzed in an off-site laboratory for VOCs, SVOCs, and metals. Selected samples were also analyzed for pesticides/PCBs and herbicides.

As a result of the investigation, no evidence of an actual burial site was found at either location. The stressed vegetation area at Burial Site 5 is thought to be the result of poorly drained clay soils. However, some soils and groundwater contamination was noted at both sites. A tetrachloroethylene plume was discovered near the base's southern boundary at the Burial Site 5 location. The source of the groundwater contamination is yet to be determined but may be off base. The maximum concentration detected in groundwater utilizing the off-site laboratory was 29 ug/l. No other significant contamination was noted at the site. The primary contaminants noted at Burial Site 6 were fuel related. These were found in both soils and groundwater. Benzene was found at 22 ug/l in groundwater at one location. The fuel contamination was suspected to be a result of the former test activities at the site. Geophysics at BS5 delineated a buried steel pipeline, of unknown extent. A pipeline investigation will be conducted in Spring 1999. This site is included in the 1998 ROD for 41 No Action Sites.

UST 4020 (ST 49)
Fuel System Maintenance Hangar

The 250-gallon UST collected fuel and hydraulic fluid from an oil/ water separator until it was pumped out and removed in 1986. No records of soil removal were found, but unknown quantities of fuels leaked during operation.

Four soil borings detected TPH near the surface and at decreasing amounts with depth. The water table was at 10 feet. The highest TPH concentration was at 15 feet.

The groundwater is being addressed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

UST 71A (ST 50)
Aero Propulsion Laboratory

Six tanks near the Aero Propulsion Laboratory were used to store jet fuel and gasoline. When removed, no signs of leakage were found.

As part of the OU8 RI, low levels of TPH were detected in the shallow saturated zone soils and vadose zone soil. TPH concentrations in the saturated zone were elevated downgradient of the site. The downgradient-saturated zone will be addressed with a bioslurper/bioventing system. A treatability study was initiated in March 1997 utilizing a trailer mounted bioslurper unit to address the down gradient area of petroleum contamination. Actions were discontinued in January 1998, with the elimination of LNAPL at the site.

No additional action is proposed at the source area. This site is included in the 1998 ROD for 41 No Action Sites.

Tank Farm 49A (ST 51)

While installing cathodic protection in June 1988, leaks were discovered in UST 209 (saturated surface soil) and in the pipe to abandoned UST 215. During tracer monitoring of the tank farm in 1989, leaks were also detected in USTs 210 and 213. Vapor monitoring indicated leaks near the tank top, indicating that the tank leaked only when full. VOC contamination was well below MCLs.

A soil vapor survey conducted in September 1988 detected some contamination. Soil and groundwater samples detected jet-fuel compounds with no evidence of free product. A $5.4 million MIL/CON project in 1993 included the removal of tanks at tank farm 49A. The State Fire Marshal issued a letter on September 15, 1994, recommending that no further action be taken. About 10,000 cubic yards of petroleum-contaminated soil was removed from the site, which was treated by thermal desorption.

The site was investigated as part of the OU2 RI. RI results indicated that no further action is warranted. This site is included in the 1996 ROD for 21 No Action Sites.

East Ramp UST (ST 52)

The East Ramp UST is in the northeast section of Area C. It is adjacent to the tarmac and south of Building 100, about 1,900 feet west of the Base boundary near Gate 1C.

East Ramp UST was part of a gasoline refueling system. It was abandoned in place before 1970. Records indicate the tank had a capacity of 12,000 gallons. It contained leaded gasoline, but no inventory or operational records exist because of the length of time the tank has been out of service. In December 1988, the UST was removed as part of a MIL/CON Program. Excavation of the tank revealed it was partially encased in concrete and filled with a caustic solution to prevent deterioration, and thus in excellent condition.

During excavation, minimal contamination was encountered at a depth of about 12 feet in the vicinity of the fill pipe connection to the tank. Samples of the contaminated soil were taken from the excavation. Visibly contaminated soil was segregated and placed on plastic sheeting for proper disposal. Because the tank was partially encased in concrete and the base of the tank was about 20 feet below grade, a considerable volume of soil was excavated to remove the tank. No further evidence of soil contamination was found during the excavation, and the tank was removed and disposed of.

In February 1991, a Site Disposition Report was prepared to meet requirements for closure of ST 52 under the Ohio Department of Commerce, Division of the SFM, Bureau of Underground Storage Tank Regulations (BUSTR) and the U.S. EPA regulations for USTs (Science Applications International 1991). As part of the site assessment for the report, five soil samples and two groundwater samples were taken and analyzed for contaminants associated with fuel storage. The report concluded that no additional corrective action is warranted for the site. This site is included in the 1998 ROD for 41 No Action Sites.

Gravel Lake Tank Site, GLTS (ST 53)

The Gravel Lake Tank Site (GLTS) is about 2,200 feet east of the western boundary of Area C. Twin Lake is west of Gravel Lake. The site is covered with brush.

The Tank Site was identified on a Base map dated July 1945. The site appeared to contain a torque sludge burning vat and four tanks. The map did not indicate the size of the tanks or whether they were above or below ground. The composition of the torque sludge is unknown. An April 1989 site visit indicated that past backfilling and earthwork had been performed, but no evidence of the tanks was found. The site was investigated under the 16 new IRP site investigations. Additional groundwater data was gathered during the OU 5 RI. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and that no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Long-Term Coal Storage Pile (OT 54)

The Coal Storage Pile covers about 3 acres. The coal pile was active for about 20 years. The use of three other coal storage areas preceded the use of this site. The coal pile was used until early 1989, when the coal inventory was depleted.

The site was investigated as part of the OU2 RI. RI results indicated that no further action is warranted. This site is included in the 1996 ROD for 21 No Action Sites.

Temporary Coal Storage Area (OT 55)

The 3.7-acre Temporary Coal Storage Area is in Areas A and C, immediately south of Building 147 and about 1,000 feet from the eastern boundary of Area C adjacent to the City of Fairborn.

The Coal Storage Area was identified in April 1989 during a review of Base aerial photographs. Coal was stored at this site from 1949 to the late 1950s.

Groundwater at the site was investigated during the OU2 RI and concluded that no further action is warranted for the site. This site is included in the 1996 ROD for 21 No Action Sites.

Coal Storage Area—Building 89 (OT 56)

The 6.2-acre Coal Storage Area is on the eastern boundary of Area C adjacent to the City of Fairborn near Building 89. The site was identified in April 1989 through a review of Base aerial photographs. Coal was stored at this site from 1941 through the early 1970s.

Low levels of PCE were detected in the soils and groundwater at the site. The OU2 RI indicated levels were low enough that no remedial action is warranted at the site. The groundwater will be monitored under the Basewide Monitoring Program. This site is included in the 1996 ROD for 21 No Action Sites.

Coal and Chemical Storage Area, CCSA (OT 57)

The Coal and Chemical Storage Area is about 400 feet west of the eastern boundary of Area C adjacent to the City of Fairborn. The storage area is a flat, grass-covered field of about 1-acre. Twenty-five 1-gallon containers of muriatic and sulfuric acids and two 1/2-gallon containers of carbon tetrachloride reportedly were stored at the site. No staining or discolored soil was evident during site visits in July and August 1988.

Because of the nature of potential contaminants at the site, activities were planned to evaluate the soil and water quality within, and adjacent to the site. Groundwater at the site reportedly flows to the southwest toward several water supply wells both on and off the Base.

An investigation of the site was conducted, and the groundwater was further investigated during the OU2 RI. No contamination was found, and so no further action will be taken.

This site is included in the 1996 ROD for 21 No Action Sites.

Chemical Disposal Area, CDA (SD 58)

The Chemical Disposal Area (CDA), which is part of the Base's surface water drainage system, is about 1,200 feet southeast of the northwestern boundary of Area C. Between 1963 and 1974, personnel from the nearby industrial and maintenance shops disposed of various shop wastes in the CDA area drainage system. The wastes were reported to be ammonia cleaning solutions, paint remover, and aircraft washing chemicals. During the period of operation, waste disposal practices allegedly involved discharge into the creek that crossed a nearby ditch. This practice ceased in 1973.

It is estimated that 1,000 gallons per year of ammonia wastes, 5 gallons per month of various washing chemicals, and about 1,200 total pounds of paint remover were disposed of at the site. Further investigation revealed that the materials disposed of were a petroleum distillate used for cleaning engine parts (PD 680); methyl ethyl ketone (MEK); JP-4 jet fuel; and a thick, yellow liquid (possibly an alkaline-based substance) used as a paint remover. Patches of discolored grass in the upper portion of the drainage system were reported during site visits in July 1988. In addition, a half-buried 55-gallon drum is located next to Lightening Avenue, close to the previous location of Building 4047. A buried pipe that discharges to the drainage ditch appears to be connected to the bottom of the drum. Base personnel said the drum was used to dilute ammonia with water, and the water was then discharged to the ditch.

This site was investigated under the OU 11 field investigation. Borings were taken near the drum to determine soils contamination. Based on existing conditions it has been determined that no significant risk or threat to public health and the environment exist and no further action is proposed. This site is included in the 1998 ROD for 41 No Action Sites.

Radioactive Waste Burial Site (RW 60)

The so-called Radioactive Waste Disposal Site is located at P Street and 12th Street. It consisted of a concrete slab over a 24-inch-diameter concrete pipe on its end, encompassed within an 8-foot chain link fence. Specific disposal records were not available. Routine monitoring did not indicate radiation levels above background.

When the site was excavated in June 1990, it was discovered that the location was never used as a disposal site. The concrete slab was used only as a staging area for radioactive waste. Excavation was performed until bedrock was reached. In addition, a ground penetrating radar survey performed of the area surrounding the site identified no anomalies. The concrete slab was x-rayed to determine whether radioactive materials may have been present within the slab.

Representatives of the U.S. Nuclear Regulatory Commission and Ohio Radiological Health Department visited the site. Upon review of all sampling data and the results of the excavation, NRC regulatory agencies and the USAF Radioisotope Committee concurred that the site should be declared closed. This site is included in the 1998 ROD for 41 No Action Sites.

Deactivated Nuclear Reactor (RW 61)

The Air Force Nuclear Engineering Center (Building 470) was a 10-megawatt reactor that was cooled and moderated with demineralized water. The reactor was completed in 1965 with criticality achieved in April. The Nuclear Regulatory Commission exempted the facility under Section 91B of the Atomic Energy Act of 1954, as amended. The reactor was operated for 5 years supporting various projects in Defense Agencies, civilian institutions, and Air Force engineering students. It was shut down on June 12, 1970.

Decommissioning of the reactor began in July 1970, and it was declared decommissioned on July 1, 1971. The decommissioning entailed removing the fuel rods for reprocessing. The primary vessel was drained and dried and the penetrations were sealed. Cavities were partially filled with hot dry sand and capped with an additional biological shield. Radioactive waste was shipped to a commercial low-level radioactive waste disposal facility. Contaminated liquids, principally cooling water, was released to the sanitary sewer in accordance with 10 CFR 20. The primary and auxiliary cooling systems remained in place.

The primary and auxiliary cooling systems consisted of underground storage tanks (three 60,000-gallon, two 5,000-gallon, one 10,000-gallon, and one 500-gallon), pipes, values, sumps, and pits. The systems were removed in 1992. The water was filtered through resin beds and disposed as wastewater. The resin beds and contaminated material were disposed of as radioactive waste. In addition, the cathodic protection system on the reactor dome was replaced.

Radiological monitoring is conducted semi-annually outside the facility, which include soil, vegetation, surface water and groundwater as part of the NRC requirement. Monitoring inside the facility is conducted quarterly which consists of ambient air surveys, swipe surveys, and air monitoring.

Groundwater monitoring of existing wells in the vicinity of the reactor was conducted in late 1994 and early 1995, as part of the Operable Unit 9 Remedial Investigation. Additional wells were also installed at this time in the reactor vicinity for continued investigation of the adjacent Earthfill Disposal Zone 9 site. Based on existing conditions it has been determined that no significant risk exists and no further action is proposed. The groundwater is being assessed by the Basewide Monitoring Program. This site is included in the 1998 ROD for 41 No Action Sites.

Landfill 14 (LF 62)

Landfill 14 is an ovular 4-acre site adjacent to Fire Training Areas 2 and 5 (FTs 36 and 39) along the northwest edge of Area C. The site was identified on a 1976 Comprehensive Development Plan map. The area is relatively flat and is covered with heavy brush. A site visit revealed the presence of two large pieces of rusted, partially buried metal. The period of use was unknown, and as a result there is a potential for disposal of hazardous substances similar to those disposed at other landfills on base. There is also a potential for the occurrence of hazardous materials, and for that reason the site was included on the IRP list.

During the OU3 RI, conducted in 1993, it was determined that LF 14 is not a traditional sanitary landfill, no evidence of household or commercial refuse was identified. Asphalt rubble, discarded electrical wire, concrete rubble, and other construction debris was observed at the surface. The RI was completed in December 1994 and showed no unacceptable risk associated with the site, therefore, no further action is required. This site is included in the 1996 ROD for 21 No Action Sites.

Spill Site 10, SP 10 (SS 63)

The flange from a newly installed fuel line burst upon startup and spilled about 150 gallons of jet fuel in October 1989.

During the site investigation performed in 1991–92, a soil boring 200 feet upgradient of the spill detected fuel-related compounds. Lead contamination and toluene are believed to be site-related. Groundwater samples detected a very thin layer of LNAPL on the groundwater surface and also detected fuel-related VOC and SVOC compounds.

As part of the OU2 RI in 1992, a dissolved petroleum hydrocarbon plume was detected originating from the POL storage area, and migrating west along the path of groundwater flow. Contamination from Spill Site 10 has commingled with the hydrocarbon plume. Contamination extends about 1,000 feet downgradient of Spill Site 10. The FS report (October 1995) recommends natural attenuation and in situ biodegradation with long-term groundwater monitoring. In September 1997 a ROD was signed. The selected remedy is in-situ biodegradation of contaminants in subsurface soil, natural attenuation of contaminants in

groundwater, institutional controls, and subsurface soil and groundwater monitoring. Long-term monitoring will occur as part of the BMP.

UST 30119 (ST 64)

During tracer leak testing in 1989, USTs 303 and 304 (acting as one unit) were found to be leaking. Soil boring samples detected VOCs well below MCL criteria, except at 8 to 12 feet and the top of the saturated zone at 30 to 32 feet. Groundwater samples detected VOCs well below their MCLs except for benzene. No free product was detected.

Five USTs (303–306 and 57) were all removed on August 9 and 10, 1994. Contaminated soil was removed from the site, and the excavation was filled with clean fill. The Division of State Fire Marshal Bureau of Underground Storage Tank Regulations approved closure of the site. Based on existing conditions it has been determined that no further action is required. This site is included in the 1998 ROD for 41 No Action Sites.

Spill Site 11, SP 11 (SS 65)
Fuel Tank Testing Range

This site operated from 1967 as a survivability/vulnerability range to test aircraft fuel tanks and other components. Over the years, small quantities of fuel were released as a result of testing operations. Various containment systems were installed at the facility and upgraded to allow for fuel releases. However, heavy rainfall events flush petroleum out of the relatively shallow vadose zone and into storm drains and adjacent drainage ditches. These releases bypass a 15,000-gallon oil/water separator system. Shallow soil borings were installed as part of the OU8 RI. Two localized areas of high TPH concentrations in soils were defined. As a result of the facility structure, the primary emphasis for a removal action at the site will be to prevent the migration of fuel released to the surface. An Action Memo has been approved for construction of a French Drain to tie into the existing oil/water separator.

The design for the project was completed in July of 1997, and construction began in December 1997. The construction was completed in February 1998, and has operated successfully for one year. This site is included in the 1998 ROD for 41 No Action Sites.

Building 20059, TCE Contamination (SS68)-Area of Concern #3

The basement of Building 59A has been found to contain eight feet of water containing halogenated VOC's. Analytical results of water samples had concentrations of Trichloroethene (TCE) at 420 ppb, 1,2-Dichoroethene-total (DCE) at 360 ppb, and Vinyl

Chloride at 28 ppb. A contract was awarded 19 February 1998 to accomplish a Preliminary Assessment and Site Investigation (PA/SI) at Building 59, located in Area B. The primary issues to be addressed are:

- The source of water in the basement of Building 59A
- The source of contaminants in the water
- The fate and transport of contaminants in the water, and
- Risks to human health and the environment from the contaminants

Fieldwork began late September 1998. Low levels of TCE was detected in Monitoring Wells (MW) 2, 3, 4 at levels ≤ 27. A source was discovered in the basement of 59A. A grease interceptor containing liquid and sludge, with a volatile odor was sampled. The analytical data indicated 490,000 ppm of TCE. The grease interceptor was cleaned and the contents were shipped off to a Hazardous Waste Facility. TCE was also detected in the sump area of Bldg 59C. This was also cleaned and shipped off as hazardous waste.

Further investigation is continuing to locate the source contaminating Bldg 59C.

Basewide Monitoring Program-Groundwater Operable Unit (OT59)

This program was originally created for basewide groundwater monitoring as operable units for Areas A, B, and C. In 1992 this site was administratively removed from the "list "of active operable units and a decision was made to address the groundwater within each OU.

Because of groundwater movement patterns under WPAFB, contaminants from one source area (i.e.,OU) may be transported through others, commingling contaminants and finally moving into remote portions of the Base. In view of this in 1994, the groundwater operable unit under the BMP was re-established to evaluate this contaminant movement, assess risks posed to human health and the environment by exposure to the contaminants, and design a remedy for groundwater throughout the entire Base.

The BMP is monitoring selected wells (EE/CA) throughout the Base that has contaminants of potential concern (COPC) that exceed MCLs. In 1998 WPAFB chose to consolidate several basewide sampling programs that were occurring separately. The EE/CA was prepared for the proposed groundwater removal under the BMP. Based on comparative evaluation of the alternatives presented in the BMP EE/CA the following actions were recommended:

For Area A, continue current groundwater treatment, discharge to surface water, monitoring, and restrictive regulations. This project is currently funded for a Treatability Study for insitu-chemical treatment of the TCE for summer 1999.

For Area B, Bldg 92, vinyl chloride site, insitu-chemical oxidation if pilot-test supports effectiveness. Long term-monitoring would be implemented if in-situ chemical oxidation is not effective. This project is currently funded for the insitu-chemical oxidation for spring 1999.

In addition long-term monitoring is recommended for other areas on Base:

Areas with existing remedies in place (OU1 and OU2);

Areas that exceed MCLs for organic COPCs, but that do not exceed the target risk range;

Areas that exceed a cumulative cancer risk of 1×10^{-4} or a hazard index of 1 for organic COPCs, but do not exceed MCLs; and

Areas exceeding MCLs and background for inorganic COPCs.

Long term-monitoring of these areas will be conducted to: (1) confirm that the conclusions drawn in the EE/CA are valid; (2) ensure that appropriate actions can be implemented if monitoring indicates that organic COPCs are migrating; and (3) confirm that the stated remedial action objectives are met.

Table A-1 contains financial information that could not be released to the public due to contracting issues and is not included in the electronic version of this document.

APPENDIX B
INSTALLATION ENVIRONMENTAL RESTORATION DELIVERABLES

	Submitted	IN EMIS	Awaiting ERPIMS	Loaded in ERPIMS
OU1				
Sampling Location		X		X
Lithology Description		X		X
Well Completion		X		X
Groundwater Level		X		X
Sampling Data		X		X
Sample Preparation Data		X		X
Analytical Results		X		X
OU2				
Sampling Location		X		X
Lithology Description		X		X
Well Completion		X		X
Groundwater Level		X		X
Sampling Data		X		X
Sample Preparation Data		X		X
Analytical Results		X		X
OU3				
Sampling Location		X		X
Lithology Description		X		X
Well Completion		X		X
Groundwater Level		X		X
Sampling Data		X		X
Sample Preparation Data		X		X
Analytical Results		X		X
OU4				
Sampling Location	Supplemental	X		X
Lithology Description	Supplemental	X		X
Well Completion	Supplemental	X		X
Groundwater Level	Supplemental	X		X
Sampling Data	Supplemental	X		X
Sample Preparation Data	Supplemental	X		X
Analytical Results	Supplemental	X		X

Table B-1
Data Loading Status Summary
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 1 of 4)

	Submitted	IN EMIS	Awaiting ERPIMS	Loaded in ERPIMS
OU5				
Sampling Location		X		X
Lithology Description		X		X
Well Completion		X		X
Groundwater Level		X		X
Sampling Data		X	1,2,3	X
Sample Preparation Data		X	1,2,3	X
Analytical Results		X	1,2,3	X
OU6				
Sampling Location		X		X
Lithology Description		X		X
Well Completion		X		X
Groundwater Level		X		X
Sampling Data		X	1,2	
Sample Preparation Data		X	1,2	
Analytical Results		X	1,2	
OU7				
Sampling Location	X			
Lithology Description	X			
Well Completion	X			
Groundwater Level	X			
Sampling Data	X			
Sample Preparation Data	X			
Analytical Results	X			
OU8				
Sampling Location			X	
Lithology Description			X	
Well Completion			X	
Groundwater Level			X	
Sampling Data		X		
Sample Preparation Data		X		
Analytical Results		X		

Table B-1
Data Loading Status Summary
MAP (March 1999)
Wright-Patterson AFB, Ohio

	Not Submitted	IN EMIS	Awaiting IRPIMS	Loaded in IRPIMS
OU9				
Sampling Location			X	
Lithology Description			X	
Well Completion			X	
Groundwater Level			X	
Sampling Data		X		
Sample Preparation Data		X		
Analytical Results		X		
OU10				
Sampling Location			X	
Lithology Description			X	
Well Completion			X	
Groundwater Level			X	
Sampling Data			X	
Sample Preparation Data		X		
Analytical Results		X		
OU11				
Sampling Location	X			
Lithology Description	X			
Well Completion	X			
Groundwater Level	X			
Sampling Data	X			
Sample Preparation Data	X			
Analytical Results	X			
New Sites				
Sampling Location				X
Lithology Description				X
Well Completion				X
Groundwater Level				X
Sampling Data				X
Sample Preparation Data				X
Analytical Results				X

Table B-1
Data Loading Status Summary
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 3 of 4)

	Not Submitted	IN EMIS	Awaiting IRPIMS	Loaded in IRPIMS
8 EFDZs				
Sampling Location				X
Lithology Description				X
Well Completion				X
Groundwater Level				X
Sampling Data				X
Sample Preparation Data				X
Analytical Results				X
BMP (USGS)				
Sampling Location	X			
Lithology Description	X			
Well Completion	X			
Groundwater Level	X			
Sampling Data	X			
Sample Preparation Data	X			
Analytical Results	X			

Table B-1
Data Loading Status Summary
MAP (March 1999)
Wright-Patterson AFB, Ohio
(Page 4 of 4)

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1981	PA	Preliminary Assessment	LF1-12, SS 26-28, FT 35-38, OT 40-44 and 54, DP 45-46, RW 60-61	Installation Restoration Program Phase I--Records Search	2/25/82	Engineering-Science	1
1983	SI	Site Investigation	LF1-12, SS 26-28, FT 35-38, OT 40-44 and 54, DP 45-46, RW 60-61	Final Report Phase II--Stage I Study	9/1/85	Roy F. Weston, Inc.	2
	SI	Site Investigation	LF 8 and 10	Work Program--Landfills 8 and 10	1/31/86	Dames and Moore	3
	SI	Site Investigation	LF 8 and 10	Health and Safety Plan--Landfills 8 and 10	3/7/86	Dames and Moore	4
	SI	Site Investigation	LF 12	Health and Safety Plan	4/30/86	Dames and Moore	5
	SI	Site Investigation	LF 8 and 10	Landfills 8 and 10 Installation Restoration Program Phase IV--Task 1, Summary of Site Specific Information	5/7/86	Dames and Moore	6
1986	SI	Site Investigation	LF 12	Work Program--Landfill 12	6/6/86	Dames and Moore	7
	SI	Site Investigation	LF 8, 10, 12	Quality Assurance Project Plan (QAPP) Site Investigation--Landfills 8, 10, and 12	6/18/86	Dames and Moore	8
	SI	Site Investigation	LF 8 and 10	Site Investigation Report--Landfills 8 and 10	8/1/86	Dames and Moore	9
	SI	Site Investigation	LF 12	Site Investigation Report--Landfill 12 (Draft)	9/10/86	Dames and Moore	10
1986	SI	Site Investigation	LF1-13, SS 26-28, FT 35-39, OT 40-44 and 54, DP 45-46, ST 49 and 50	Installation Restoration Program Phase II--Technical Operations Plan Stage 2	10/1/86	Roy F. Weston, Inc.	11
1987	RD/RA	Remedial Design/ Remedial Action	LF 4	Site Specific Health and Safety Plan; WPAFB Landfill 4 Removal and Closure Sampling Plan	10/5/87 10/8/87	S & ME	12
1987	SI	Site Investigation	LF 8, 10, 12	Analysis of Alternative for Remedial Investigation/Feasibility Study on Landfills 8, 10, and 12 (proposal)	10/8/87	Dames and Moore	13

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
	SI	Site Investigation	LF 12	Toxicity of Installation Restora- tion Program (IRP) Leachate Samples--Following Single and Repeated Treatment	2/1/88	Northrop Services, Inc.	14
1988	PA	Preliminary Assessment	DP 45-46	Burial Sites 1 and 2	5/16/88	Engineering-Science	15
1988	PA	Preliminary Assessment	OT 40-44 and OT 54	Central Heating Plant Nos. 1 (Bldg. 66), 2 (Bldg. 271), 3 (Bldg. 170), 4 (Bldg. 1240), 5 (Bldg. 770) Long-Term Coal Storage Pile	5/16/88	Engineering-Science	16
1988	PA	Preliminary Assessment	LF 14-21	Earthfill Disposal Zones 1, 2, 3, 4, 5, 6, 7, 8	5/16/88	Engineering-Science	17
1988	PA	Preliminary Assessment	FT 35-39	Fire Training Areas 1, 2, 3, 4, 5	5/16/88	Engineering-Science	18
1988	PA	Preliminary Assessment	LF 1-13	Landfill Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	5/16/88	Engineering-Science	19
1988	PA	Preliminary Assessment	SS 26-29	Spill Site Nos. 1, 2, 3, 4	5/16/88 6/30/88	Engineering-Science	20
1988	PA	Preliminary Assessment	ST 49-50	Underground Storage Tank-- Buildings 4020 and 71A	5/16/88	Engineering-Science	21
1988	PA	Preliminary Assessment	LF14-21	Installation Restoration Program Work Plan For the Geophysical Investigation of Eight Earthfill Disposal Zones	7/1/88	Engineering-Science	22
	SI	Site Investigation	LF1-13, SS 26-28, FT 35-39, OT 40-44 and 54, DP 45-46, ST 49 and 50	Work Plan for the Installation Restoration Program--Stage 2 Health and Safety Plan for the Installation Restoration Program--Stage 2 Quality Assurance Project Plan--Installation Restoration Program--Stage 2	8/1/88	Roy F. Weston, Inc.	23
Year	**Phase**	**Project Title**	**Sites Examined WIMES-ES ID**	**Title**	**Date**	**Author**	**Report Number**

1988	PA	Preliminary Assessment	SD 58	Chemical Disposal Area	8/8/88	2750 ABW/EMR WPAFB	24
1988	PA	Preliminary Assessment	OT 57	Coal and Chemical Storage Area	8/22/88	2750 ABW/EMR WPAFB	25
1987	RD/RA	Remedial Design/ Remedial Action	LF 4	Public Health Evaluation for Landfill 4 / Skeel Avenue	8/25/88	Roy F. Weston, Inc.	26
1988	PA	Preliminary Assessment	DP 47, SS30	Burial Site 3, Spill Site 5	9/7/88 9/9/88	2750 ABW/EMR WPAFB	27
1988	RD/RA	Remedial Design/ Remedial Action	SS 31 and 33	PCB Contamination Evaluation of Two Sites (Spill Sites 6 and 8)	9/16/88	Dames and Moore	28
1988	PA	Preliminary Assessment	SS 31-32	Spill Site Nos. 6 and 7	10/12/88 10/13/88	2750 ABW/EMR WPAFB	29
1988	SI	Site Investigation	ST 51	Site Assessment	12/6/88	PEI Associates	30
1988	PA	Preliminary Assessment	SS 33	Spill Site 8	12/9/88	2750 ABW/EMR WPAFB	31
1988	PA	Preliminary Assessment	ST 51	Tank Farm 49A	12/19/88	2750 ABW/EMR WPAFB	32
1988	PA	Preliminary Assessment	LF 22	Earthfill Disposal Zone 9	12/30/88	2750 ABW/EMR WPAFB	33
1988	PA	Preliminary Assessment	ST 52	East Ramp Tank Removal	1/25/89	2750 ABW/EMR WPAFB	34
1988	PA	Preliminary Assessment	LF 23-24	Earthfill Disposal Zones 10 and 11	1/31/89	2750 ABW/EMR WPAFB	35
1988	SI	Site Investigation	LF 14-21	Installation Restoration Program Final Site Inspection Part I Report for Eight Earthfill Disposal Zones	2/1/89	Engineering-Science	36
1988	PA	Preliminary Assessment	LF 25	Earthfill Disposal Zone 12	2/1/89	2750 ABW/EMR WPAFB	37
1989	PA	Preliminary Assessment	DP 48	Burial Site 4	3/17/89	2750 ABW/EMR WPAFB	38
1989	PA	Preliminary Assessment	ST 53	Gravel Lake Tanks	4/17/89	2750 ABW/EMR WPAFB	39

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1989	PA	Preliminary Assessment	OT 55-56	Temporary Coal Storage Pile Coal Storage (Building 89)	4/26/89	2750 ABW/EMR WPAFB	40
1989	PA	Preliminary Assessment	SS 34	Spill Site 9	5/25/89	WPAFB	41
1986	SI	Site Investigation	LF1-13, SS 26-28, FT 35-39, OT 40-44 and 54, DP 45-46, ST 49 and 50	Installation Restoration Program Stage 2 Report Volumes I-IX	7/1/89	Roy F. Weston, Inc.	42
1989	PA	Preliminary Assessment	LF 62	Landfill Number 14	10/30/89	2750 ABW/EMR WPAFB	43
1989	PA	Preliminary Assessment	SS 63	Spill Number 10	11/21/89	2750 ABW/EMR WPAFB	44
1989	IRA	Interim Response Action	LF 10 (Phase I)	Site Specific Safety, Health and Emergency Response Plan for the Rapid Response Project for Sampling and Surveying Work Plan--Investigative Sampling and Surveying Action Sampling and Analysis Plan for Leachate Collection System Geophysical Survey Word Plan and SSP (Leachate Collection System) Geophysical Survey Report Analytical Report	3/8/90 3/16/90 4/1/90 5/1/90 5/10/90	O. H. Materials Corp.	45
1989	IRA	Interim Response Action	SS 31 and 33	Work Plan for Spill Sites 6 and 8 Contractor Sampling and Analysis Plan for Spill Sites 6 and 8 Site Specific Safety, Health and Emergency Response Plan for the Rapid Response Project for Sampling and Remediation and Final Report	3/27/90 3/28/90 5/14/90 6/1/90	O. H. Materials Corp.	46
1988	SI	Site Investigation	LF 22-25 and 62; SS 30, 32, 63 and 65; DP 47-48; ST 53; OT 55-57; SD 58	Final Site Inspection Project Work Plan for 16 IRP Sites	6/1/90	SAIC	47
1988	RI/FS	Remedial Investigation/ Feasibility Study	LF1-21, SS 26-28, FT 35-39, OT 40-44 and 54, DP 45-46, ST 49 and 50	Remedial Investigation/Feasibility Study Work Plan for 39 Sites	6/30/90	Engineering-Science	48
1990	PA	Preliminary Assessment	ST 64	Preliminary Assessment/ UST Building 30119	7/12/90	2750 ABW/EMR WPAFB	49

Table B-2
Project Deliverables
MAP (March 1999)
Wright-Patterson AFB OH

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1987	IRA	Interim Response Action	FT 39	Final Report, Groundwater Quality Restoration Program (Oct. 87 to Jan. 90)	8/1/90	BioSystems	50
1990	IRA	Interim Response Action	LF 5	Groundwater Investigation Report June 90 to March 91, Volumes 1 to 9	6/15/90 to 3/91	Battelle	51
1990	IRA	Interim Response Action	LF 2, 7, 8, 11, 12 and DP 48	Removal and Offsite Disposal of Drummed Wastes Health and Safety Plan Quality Assurance Project Plan Sampling Plan Storage, Transportation, and Disposal Field Data for Drum Removal Analytical Data for Drum Removal Data Summary Report--Final for Drum Removal	9/21/90 11/30/90 1/16/91	O. H. Materials Corp.	52
1989	RI	Remedial Investigation	LF 8 and 10	Analysis of Soil Gas Survey Results for LF 8, The Fire Training Area Adjacent to LFs 8, 10, and the Chemical Disposal Trenches	11/1/90	Engineering-Science	53
1990	IRA	Interim Response Action	LF 10	Temporary Leachate Collection System--Phase II Contingency Plan Safety, Health, and Emergency Response Plan Work Plan Temporary Maintenance and Site Inspection Task with Forms Final Report	11/15/90 4/5/91 8/30/91	O.H. Materials Corp.	54
1990	RI	Remedial Investigation	LF 8 and 10	Preliminary Site-Specific Risk Assessment for LFs 8 and 10	12/3/90	O.H. Materials Corp.	55

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1990	IRA	Interim Response Action	SS 27-28	Free Product Recovery Well Work Plan At Spill Sites 2 and 3 Final Report--Skimmer Pump Health and Safety Plan--Dual Pump Work Plan--Dual Pump	 2/21/91 4/19/91 12/6/91 1/29/92	Petro Environmental Tech O.H. Materials Corp.	56
	PA	Preliminary Assessment	SS 65	Spill Site 11	5/1/91	2750 ABW/EMR WPAFB	57
1991	NFRAP	No Further Remedial Action Proposed	SS 33	Decision Document--Spill Site 8	5/31/91	2750 ABW/EMR WPAFB	58
1990	RI	Remedial Investigation	SS 27-28	Analysis of Soil Gas Survey Results for Spill Sites 2 and 3	7/1/91	Engineering-Science	59
1991	NFRAP	No Further Remedial Action Proposed	ST 52	East Ramp Tank Removal	9/5/91	2750 ABW/EMR WPAFB	60
1991	NFRAP	No Further Remedial Action Proposed	SS 29	Decision Document--Spill Site 4	9/5/91	2750 ABW/EMR WPAFB	61
1991	NFRAP	No Further Remedial Action Proposed	OT 40-41	Decision Document--Central Heating Plants 1 and 2	9/6/91	2750 ABW/EMR WPAFB	62
1989	RI	Remedial Investigation	FT 35-36 and 39	Analysis of Soil Gas Survey Results for Fire Training Areas 1, 2, and 5	1/1/92	Engineering-Science	63
1989	RI	Remedial Investigation	LF 3, 4, 5, 6, 7	Analysis of Soil Gas Survey Results for Landfills 3, 4, 5, 6, 7	1/1/92	Engineering-Science	64
1989	RI	Remedial Investigation	LF 12-13, SS 26, FT 37-38	Analysis of Soil Gas Survey Results for Fire Training Areas 11 and 12	1/1/92	Engineering-Science	65
1992	NFRAP	No Further Remedial Action Proposed	RW 60	Decision Document--Radioactive Waste Burial Site	2/24/92	2750 ABW/EMR WPAFB	66
	RI	Remedial Investigation	LF 8, 10	Focused Remedial Investigation	3/15/92	Engineering-Science	67

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
	RI/FS	Remedial Investigation/ Feasibility Study	SS 27-28 and 63, OT 54	Field Sampling Plan for Remedial Investigation/Feasibility Study at Operable Unit 2 (Northeastern Area)	6/30/92	Engineering-Science	68
	SI	Site Investigation	LF 14-21	Site Investigation Report for Eight Earthfill Disposal Zones	8/14/92	Engineering-Science	69
1992	LTM	Decision Document	LF 14-21	Decision Document--Earthfill Disposal Zones 1 (LF 14), 2 (LF 15), 3 (LF 16), 4 (LF 17), 5 (LF18), 6 (LF 19), 7 (LF 20), 8 (LF 21)	8/18/92	Engineering-Science	70
	RI/FS	Remedial Investigation/ Feasibility Study	LF 8, 10	Focused Feasibility Study for the Off-Source Remedial Investigation	8/28/92	Engineering-Science	71
	RI/FS	Remedial Investigation/ Feasibility Study	LF 8, 10	Proposed Plan for the Source Control Operable Unit at Landfills 8 and 10	9/1/92	2750 ABW/EMR WPAFB	72
1992	LTM	Decision Document	DP 47-48	Decision Document--Burial Sites 3 (DP47) and 4 (DP 48)	9/29/92	SAIC	73
1992	LTM	Decision Document	OT 55-57	Decision Document--Temporary Coal Storage Pile (OT 55), Coal Storage Bldg 89 (OT 56), and Coal and Chemical Storage Area (OT 57)	9/29/92	SAIC	74
1992	LTM	Decision Document	SD 58	Decision Document--Chemical Disposal Area (SD 58)	9/29/92	SAIC	75
1992	LTM	Decision Document	LF 23-25	Decision Document--Earthfill Disposal Zones 10 (LF 23), 11 (LF 24), 12 (LF 25)	9/29/92	SAIC	76
1992	LTM	Decision Document	ST 53	Decision Document--Gravel Lake Tanks	9/29/92	SAIC	77
1992	LTM	Decision Document	SS 31	Decision Document--Spill Site 6	9/29/92	2750 ABW/EMR WPAFB	78
1992	RI/FS	Remedial Investigation/ Feasibility Study	LF 3, 4, 6, 7	Site Specific Work Plan for Remedial Investigation/Feasibility Study Operable Unit 4	4/12/93	CH2M HILL	79

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1992	RI/FS	Remedial Investigation/ Feasibility Study	LF 5, FT 35	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 5	3/31/93	IT Corporation	80
1988	SI	Site Investigation	LF 22-25 and 62; SS 30, 32, 63 and 65; DP 47-48; ST 53; OT 55-57; SD 58	Site Investigation for 16 IRP Sites	3/1/93	SAIC	81
1992	RI	OU1- Off-Source	LF8, 10	Off-Source Remedial Investigation for Landfills 8 amd 10	6/11/93	Engineering Science	82
1992	RI	OU1-Off Source	LF8, 10	Off-Source Remedial Investigation for Landfills 8 and 10--Tech Memo 1	8/12/93	Engineering Science	82
1992	RI	OU 3 Remedial Investigation	LFs 11,12,14,24,25,SS26, FT35,36,37,38,39	OU3 Field Sampling Plan	12/4/92	SAIC	83
1992	IRA	OU2 Free Product Recovery	SS27,28	Free Product Recovery 90% Design	2/3/93	OHM	84
1993	IRA	Removal Action	LF 5	Point Source Removal Work Plan	2/19/93	IT Corporation	85
1993	RI	Basewide Monitoring Program		Basewide Monitoring Program	4/10/93	USGS	86
1992	IRA	OU2 Free Product Recovery	SS27,28	Free Product Recovery Field Investigation Report	5/22/93	Engineering Science	87
1993	ROD	Record of Decision	LF8,10	Record of Decision for the Landfills 8 and 10 Source OU	6/30/93	88ABW/EMR	88
1993	RD	Remedial Design	LF8,10	Remedial Design Work Plan for the Landfills 8 and 10 Source OU	8/11/93	IT Corporation	89
1993	RI/FS	Remedial Investigation/ Feasibility Study	LF1,2,14	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 6	10/20/93	Metcalfe and Eddy	90
1993	PP	Proposed Plan	LF8,10	Final Remedial Action Proposed Plan for Landfills 8 and 10	1/14/94	88ABW/EMR	91
1993	RI/FS	Remedial Investigation/ Feasibility Study	LF13,OT42,ST51,52,64,SS29	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 10	2/8/94	CH2M HILL	92
1993	RI/FS	Remedial Investigation/ Feasibility Study	SS30,31,32,34,65,ST50	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 8	6/6/94	CH2M HILL	93
1993	IRA	Removal Action	LF5	Basewide Remedial Action Plan for Landfill Capping	6/21/94	IT Corporation	94
1994	RI/FS	Remedial Investigation/ Feasibility Study	LF15,16,17,18,19,20,21,22,23 DP47,RW61,OT44	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 9	6/24/94	IT Corporation	95
1993	ROD	Record of Decision	LF8,10	Final Remedial Action Record of Decision for Landfills 8 and 10	6/30/94	88ABW/EMR	96

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1994	IRA	Removal Action	LF9	OU7 Security Fence Workplan	8/2/94	OHM	97
1994	RD	Remedial Design	LF8,10	Final Remedial Action Design for OU1-Phase 1	8/29/94	IT Corporation	98
1994	RI/FS	Remedial Investigation/ Feasibility Study	LF9	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 7	9/30/94	ICI	99
1994	RI/FS	Remedial Investigation/ Feasibility Study	DP46,ST49,SD58	Site Specific Work Plan for Remedial Investigation Feasibility Study at Operable Unit 11	11/10/94	Metcalfe and Eddy	100
1995	RI/FS	Remedial Investigation/ Feasibility Study	LF 3, 4, 6, 7	Remedial Investigation/ Feasibility Study for OU 4	5/10/95	CH2M HILL	101
1995	RI/FS	Remedial Investigation/ Feasibility Study	SPs 2, 3, 10, BS1, LTCSA, CS89, CCSA	Remedial Investigation/Feasibility Study for OU2	8/1/95	Engineering Services	102
1995	RI/FS	Remedial Investigation/ Feasibility Study	LFs 11, 12, 14, EFOZs 11, 12, FTAs 1, 2, 3, 4, 5	Remedial Investigation/Feasibility Study for OU3	7/7/95	SAIC	103
1995	RI/FS	Remedial Investigation/ Feasibility Study	LF5, FTA1, DP48, ST53	Remedial Investigation/Feasibility Study for OU5	9/1/95	IT Corporation	104
1994	IRA	Remedial Action	LF5	Site-specific Removal Action Plan for Landfill Capping--Site-specific Document for LF5	6/21/94	IT Corporation	105
1994	RD	Remedial Design	LF5	90% Design for Landfill Capping System	9/19/94	IT Corporation	106
1993	DD	Decision Document	SS32	Spill Site 7 Decision Document	9/17/93	88 ABW/EMR	107
1993	DD	Decision Document	SS34	Spill Site 9 Decision Document	9/17/93	88 ABW/EMR	108
1993	DD	Decision Document	DP45	Burial Site 1 Decision Document	9/28/93	Engineering Science	109
1993	DD	Decision Document	OT54	Long-term Coal Storage Pile Decision Document	9/28/93	Engineering Science	110
1994	DD	Decision Document	SS26	Spill Site 1 Decision Document	9/29/94	SAIC	111
1994	DD	Decision Document	FT35	FTA1 Decision Document	9/29/94	IT Corporation	112
1994	DD	Decision Document	FT36	FTA2 Decision Document	9/29/94	SAIC	113
1994	DD	Decision Document	FT38	FTA4 Decision Document	9/29/94	SAIC	114

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1994	DD	Decision Document	LF62	Landfill 14 Decision Document	9/29/94	SAIC	115
1995	LTM	Basewide Monitoring Program	OT-59	Results of the Basewide Monitoring Program 1993-1994	Jun-95	USGS	116
1995	LTM	Basewide Monitoring Program	OT-59	Site Specific Work Plan for Remedial Design Tasks	8/14/95	IT Corporation	117
1995	IRA	Removal Action	LF11	Site-specific Removal Action Plan for Landfill 11 Operable unit 3	3/31/96	SAIC	118
1995	RD	Remedial Design	LF11	Design for Landfill Capping	6/12/96	ICI	120
1995	PP	Proposed Plan	LF62,FT36,37,38,39 LF24,25, SS26	No Action Proposal Plan for Sites Within or Near OU3	10/31/95	SAIC	121
1995	EE/CA	Engineering Evaluation/ Cost Analysis	LF12	Evaluation of Remedies for Landfill 12	6/5/97	IT Corporation	122
1995	PP	Proposed Plan	FT35,ST53,DP48	No Action Proposal Plan for Sites Within or Near Operable Unit 5	5/1/96	IT Corporation	123
1995	DD	Decision Document	FT37	FTA3 Decision Document	9/1/95	SAIC	124
1995	DD	Decision Document	FT39	FTA5 Decision Document	9/1/95	SAIC	125
1995	RD	Remedial Design	LF8,10	Final Remedial Action Design for OU1 - Phase II	6/15/95	IT Corporation	126
1995	IRA	Remedial Action	LF1,2 LF14	Site-specific Removal Action Plan for OU6	1/30/96	Metcalfe and Eddy	127
1995	RI/FS	RI/FS	LF1,2 LF14	RI/FS for OU6	Dec-95	Metcalfe and Eddy	128
1995	RI/FS	Remedial Investigation		Final RI OU2	Aug-95	Engineering Science	129
1995	DD	Decision Documents	ST51	Tank Farm 49A	Sep-95	CH2M HILL	130
1995	DD	Decision Documents	ST64	Building 30119	Sep-95	CH2M HILL	131
1995	DD	Decision Documents	OT42	CHP-3	Sep-95	CH2M HILL	132
1996	RD	Remedial Design	SS65	Remedial Design for Spill Site 11 Removal Action	Jul-97	CH2M HILL	133
1996	RD	Remedial Design	SS30, ST50	Conceptial Remedial Design for Spill Site 5 and UST71A	Nov-96	CH2M HILL	134
1996	RD	Remedial Design	LF3,4,67	Remedial Design for LF3,4,67	Apr-97	CH2M HILL	135
1995	EE/CA	OU8 EE/CA	SS30, ST50	Engineering Evaluation/Cost Analysis; Operable Unit 8, Spill Site 5, Underground Storage Area 71A	3/31/96	CH2M HILL	136
1995	SSRAP	Removal Action	LF3,4,6,7	Site Specific Removal Action Plan OU4 Landfills 3,4,6,7. Drum Staging/Disposal Area.	1/15/96	CH2M HILL	137

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1995	RI	OU8 Remedial Investigation	SS30, ST50, SS65	Remedial Investigation Report, Operable Unit 8, Spill Site 5, Underground Storage Tank 71A and Spill Site 11	Jan-97 Final	CH2M HILL	138
1995	RI	OU9 Remedial Investigation	LF15,16,17,18,19,20,21,22, 23; DP47, OT44	Remedial Investigation Report Operable Unit 9; Earthfill Disposal Zones 2,3,4,5,6,7,8,9,10 Burial Site 3, Heating Plant 5/DRMO	Sep-97	IT CORP	139
1996	Actio n Memo	OU8 Spill Site 11 Action Memorandum	SS65	OU8/Spill Site 11 Action Memorandum	May-97	CH2M HILL	140
1996	PP	Proposed Plan	LF14	No action proposed plan for Earthfill disposal zone 1 within Operable Unit 6	4/30/96	M&E	141
1996	PP	Proposed Plan	DP45, OT54, OT55, OT56, OT57	No action proposed plan for sites within Operable Unit 2	5/1/96	Hazwrap	142
1996	P	Proposed Plan	LF13, OT42, ST51, ST64	No action proposed plan for sites within or near Operable Unit 10	5/1/96	CH2M HILL	143
1996	Actio n memo	Action Memorandum	LF1, LF2	Action memorandum - landfills nos. 1 and 2	4/30/96	Metcalfe & Eddy	144
1996	FS	Feasibility Study	SS27, SS28, SS63	Feasibility study for spill sites 2, 3, 10 within Operable Unit 2	8/31/96	Engineering Science	145
1996	ROD	Record of Decision	LF62, FT36, FT37, FT38, FT39, LF24, LF25, FT35, ST53, DP48, LF14, DP45, OT54, OT55, OT56, OT57, LF13, OT42, ST51, ST64, SS26	Record of decision for 21 no action sites	8/26/96	88ABW/EMR	146
1996	RI	Remedial Investigation	LF9	Field investigation report Operable Unit 7	11/8/96	ICI	147
1996	IRA	Removal Action	LF9	Site-specific Removal Action Plan, Landfill 9 Operable Unit 7	Apr-97	ICI	148
1996	Actio n Memo	Action Memorandum	LF9	Action Memorandum Landfill 9 capping Presumptive Removal Action	Jun 98	WPAFB	149
1996	RI	Remedial Investigation	DP46, ST49, SD58	Field investigation report, Operable Unit 11	Aug-97	Metcalfe & Eddy	150
1996	LTM	Basewide Monitoring Program	All	Background Technical Memorandum	9/12/96	IT Corporation	151
1996	LTM	Basewide Monitoring Program	All	Field Activities Technical Memorandum	9/12/96	IT Corporation	152

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1996	LTM	Basewide Monitoring Program	All	Groundwater Flow Modeling Technical Memorandum	1/21/97	IT Corporation	153
1996	LTM	Basewide Monitoring Program	All	Transport Modeling Technical Memorandum	6/15/98	IT Corporation	154
1996	LTM	Basewide Monitoring Program	All	Current Conditions Human Health Risk Assessment Technical Memorandum	5/23/97	IT Corporation	155
1996	LTM	Basewide Monitoring Program	All	Future Conditions Human Health Risk Assessment Technical Memorandum	2/24/98	IT Corporation	156
1996	LTM	Basewide Monitoring Program	Deleted became EE/CA	Groundwater Remedial Alternatives	deleted	IT Corporation	157
1996	RD	Remedial Design	LF1, LF2	Remedial Design for OU6	Jun-97	Metcalfe & Eddy	158
1996	Action memo	OU3 Landfill 11 Action Memorandum	LF11	OU 3/Landfill 11 Action Memorandum	Mar-96	SAIC	159
1996	RA	Landfill 5 Capping system	LF5	Independent Engineer's Certification Report	Dec-96	IT Corporation	160
1996	RD	Remedial Design	LF12	Remedial Design for Landfill 12 Removal Action	6/5/97	IT Corporation	161
1995	RA	Remedial Action	LF8, 10	Work Plan, Final Remediation Phase I, OU1	1/17/95	Kelchner	162
1996	RD	OU8 Conceptual design report	SS30, ST50	Conceptual Design for SS5 UST 71A Down Gradient Area of Petroleum Contamination	Nov-96	CH2M HILL	163
1996	TS	OU8 treatability study workplan	SS30, ST50	Treatability Study Plan for SS5, UST 7/A Down Gradient Area of Petroleum Contamination	Mar-97	CH2M HILL	164
1996	RI	OU9 workplan addendum	OT44	Site Specific Workplan Addendum for Supplemental Investigation at Defense Revitilization and Storage Facility.	Nov-96	IT Corporation	165
1996	SI	Site investigation workplan	DP66, DP67	Site Investigation Workplan for	Feb-97	ICI	166
1996	PA	Preliminary assessment	DP66	Preliminary assessment potential BS5	Nov-96	ICI	167
1996	PA	Preliminary assessment	DP67	Preliminary assessment potential BS6	Nov-96	ICI	168
1994	LTM	LTM	Basewide	Round 1 Technical Memorandum	1/26/94	USGS	169
1994	LTM	LTM	Basewide	Round 2 Technical Memorandum	5/31/94	USGS	170

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1994	LTM	LTM	Basewide	Round 3 Technical Memorandum	9/21/94	USGS	171
1995	LTM	LTM	Basewide	Round 4 Technical Memorandum	1/27/95	USGS	172
1995	LTM	LTM	Basewide	Results of the Basewide Monitoring Program 1993-94 Summary Report	5/31/95	USGS	173
1997	IRA	Removal Action	LF6, 7	Removal Action Work Plan Soil Cover/Drainage Improvement Project, Operable Unit 4 Landfills 6 & 7	9/4/97	Kelchner Environmental	174
1997	IRA	Removal Action	LF9	Removal Action Work Plan Landfill Cover Project Operable Unit 7 - Landfill 9	10/8/97	Kelchner Environmental	175
1996	LTM	Basewide Monitoring Program	All	Results of Soil & Groundwater Sampling (validated)	1/3/96	IT Corporation	176
1996	LTM	Basewide Monitoring Program	All	Results of Groundwater, Surface Water, & Sediment Sampling (validated)	2/9/96	IT Corporation	177
1997	LTM	Basewide Monitoring Program	SS27, SS28, SS63	Draft OU2 Baseline Sampling Results	7/7/97	IT Corporation	178
1997	LTM	Basewide Monitoring Program	All	Engineering Evaluation/Cost Analysis	Pending (May 99)	IT Corporation	179
1997	LTM	Basewide Monitoring Program	All	Basewide Ecological Risk Assessment Technical Memorandum	Pending (May 99)	IT Corporation	180
1998	LTM	Basewide Monitoring Program	SS27, SS28, SS63	OU2 Long-term Monitoring Sampling Results-Round 1-Oct 97	2/13/98	IT Corporation	181
1997	ROD	Record of Decision	SS27, SS28, SS63	Record of Decision for Spill Sites 2, 3 and 10 within Operable Unit 2	Sep-97	WPAFB	182
1997	RA	Landfill 12 Excavation & Disposal	LF12	Work Plan for the Landfill 12 Project	10/8/97	OHM	183
1998	RA	Landfill 12 Excavation & Disposal	LF12	Final Report for Landfill 12 Project	6/16/98	OHM	184
1997	RA	Landfill 11 Capping Project	LF11	Workplan for Landfill 11 Capping	2/12/97	Kelchner Environmental	185
1997	RA	Landfill 11 Capping Project	LF11	Final Report for Landfill 11 Capping	8/15/97	Kelchner Environmental	186

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1998	RA	Remedial Action	LF8, 10	Independent Engineer's Certification Report	6/16/98	IT Corporation	187
1997	TS	OU8 Bioslurper Treatability Study Report	SS30, SS50	Treatability Study Final Report	Aug-97	CH2M Hill	188
1997	SI	Site Investigation	BS5, BS6	Site Investigation Report Burial Sites 5 & 6	June 98 Mar-98	ICI	189
1998	RD	Remedial Design	HP5/DRMO	Remedial Design for DRMO Removal Action	July 97	IT Corporation	190
1997	IRA	Removal Action	LF1, LF2	Soil Cover, Drainage Improvement Operable Unit 6, LF1, LF2	July 1998	Kelchner Environmental	191
1997	RI	Remedial Investigation Addendum	OT41	Mercury Investigation HP2 (OU4) RI Addendum Report	May 1997	CH2M Hill	192
1998	SI	Site Investigation Bldg 59/Area B	SS68	Preliminary Assessment Site Investigation	pending April 1999	IT Corporation	193
1996	Action memo	OU4 Action Memorandum	LFs 3, 4, 6, 7	Action Memorandum, OU4 LFs 3,4,6,7 and Drum Staging/Disposal Area	July 1996	CH2M Hill	194
1997	IRA	Removal Action	LFs 1 & 2	Removal Action Work Plan	10/1/97	Kelchner Environmental	195
1998	IRA	Removal Action	LF9	Final Report OU7, LF9 Cover Project	8/10/98	Kelchner Environmental	196
1998	RA	Remedial Action	LF9	Operation & Maintenance Plan, OU7, LF9 Cover Project	8/10/98	Kelchner Environmental	197
1998	IRA	Removal Action	LFs 3, 4, 6, 7,	Final Report OU4, LFs 6 & 7 Soil Cover/Drainage Improvement Project	3/13/98	Kelchner Environmental	198
1998	RA	Remedial Action	LFs 3, 4, 6, 7	Operation & Maintenance Plan LFs 6 & 7 Soil Cover/Drainage Improvement Project	3/13/98	Kelchner Environmental	199
1998	IRA	Removal Acton	LFs 1 & 2	Final Report OU6, Landfills 1 & 2 Soil Cover and Drainage Cover System	9/11/98	Kelchner Environmental	200
1998	RA	Remedial Action	LFs 1 & 2	Operation & Maintenance Plan, OU6, LFs 1 & 2	9/11/98	Kelchner Environmental	201
1997	RD	Remedial Design	LFs 3, 4, 6, 7	Final Design OU4, LFs 3, 4, 6, 7 And Drum Staging/Disposal Area	April 1997	CH2MHill	202
1998	RD	Remedial Design	LFs 3, 4, 6, 7	Design Addendum Report, OU4, LFs 3, 4, 6, 7, Drum Staging Disposal Area	October 1998	CH2MHill	203
1997	IRA	Remedial Design	LF 9	Removal Action Design, OU7, Landfill 9 Cover Project	6/30 98	ICI	204

Year	Phase	Project Title	Sites Examined WIMES-ES ID	Title	Date	Author	Report Number
1998	PP	Proposed Plan	LFs 1-7, 9 11, 12, 15-23, OT 40,41,43,44,SS29,30,31,32,33, 34,65, OT49,50,52,DP46,47,66,67,SD 58,RW60,61	Proposed Plan for 41 Sites	June 1998	IT Corporation	205
1998	ROD	Record of Decision	" "	Record of Decision for 41 No Action Sites	8/27/98	IT Corporation	206
1998	LTM	Basewide Monitoring Program	SS 27,28,63	OU2 Long-term monitoring-Sampling Results – Round 2 April 1998	7/27/98	IT Corporation	207
1998	LTM	Basewide Monitoring Program	SS27,28,63,	OU2 Long-term monitoring-Sampling Results – Round 2 October 1998	2/19/99	IT Corporation	208
1999	LTM	Basewide Monitoring Program	ALL	Long-term Groundwater Monitoring Baseline Report	Pending April 1999	IT Corporation	209
1997	RA	Remedial Action	LF8 & 10	Final Report, Operable Unit 2, Landfills 8 & 10 Final Remediation	1/31/97	Kelchner Environmental	210
1998	IRA	Removal Action	LF12	Independent Engineer's Report Landfill 12, Removal Action	11/2/98	IT Corporation	211
1998	RA	Removal Action	SS65	Final Report for SS11 Remedial Action	May 1998	OHM Corporation	212
1998	EE/CA	Engineer Evaluation Cost Analysis	OT44	EE/CA for DRMO Soil Removal Action	June 1998	IT Corporation	213
1998	RD	Remedial Design	OT44	Soil removal Action (DRMO)	August 1998	IT Corporation	214
1998	RA	Removal Action	OT44	Soil Removal Final Report	January 1999	Kelchner Environmental	215

Report Numbers (see Table B-2)									
Site I.D.	PA/SI	RI/FS Work Plans	RI	FS	RD/RA	DD/RODs	IRA	Other	Comments
LF1	1,2,11,19,23,42	48,90	90		127, 144, 158, 201	205,206	195, 200	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	ROD
LF2	1,2,11,19,23,42	48,90	90		127, 144, 158, 201	205, 206	52, 195, 200	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	ROD
LF3	1,2,11,19,23,42	48,79	64,101	101	119, 135, 137, 194,198,199, 202,203	205, 206,	198, 199, 202	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF4	1,2,11,19,23,42	48,79	64,101	101	12, 26, 119, 135, 137,194,198,199, 202,203	205, 206	198, 199, 202	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF5	1,2,11,19,23,42	48,80	64,104		85, 94, 106, 160	205, 206	51, 105	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF6	1,2,11,19,23,42	48,79	64,101	101	119, 135, 137, 174,194,198,199, 202,203	205. 206	174,198 199, 202	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF7	1,2,11,19,23,42	48,79	64,101	101	119, 135, 137, 174,194,198,199, 202,203	205, 206	52, 174,198 199, 202,203	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF8	1,2,3,4,6,8,9,11, 13,19,23,42	48	53,55,6 7,82	71	89,98,126, 162, 187, 210	88,96	52	72, 91, 144, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM, ROD
LF9	1,2,11,19,23,42	48,99	147		148, 149, 175, 196, 197,204	205, 206	97, 175,196 197,204	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	ROD
LF10	1,2,3,4,6,8,9,11, 13,19,23,42	48	53,55,6 7,82	71	89,98, 126, 162, 187, 210	88,96	45,54	72,91, 144, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM, ROD
LF11	1,2,11,19,23,42	48,83	103		118, 120, 159, 185, 186	205, 206	52	141, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	ROD
LF12	1,2,5,7,8,10,11, 13,14,19,23,42	48,83	65,103		122, 161, 183, 184, 211	205, 206	52	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	LTM/ROD
LF13	11,19,23,42	48,92	65			143, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD

Report Numbers (see Table B-2)									
Site I.D.	PA/SI	RI/FS Work Plans	RI	FS	RD/RA	DD/RODs	IRA	Other	Comments
LF14	17,22,36,69	48,83,90	103, 128	128	127	70, 141, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF15	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF16	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF17	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF18	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF19	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF20	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF21	17,22,36,69	48,95	139			70, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF22	33,47, 81	95	139			205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF23	35,47, 81	95	139			76, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF24	35,47, 81	83	103			76, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF25	37,47, 81	83	103			76, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
LF62	43,47, 81					115, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS26	1,2,11,20,23,42	48,83	65			111, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS27	1,2,11,20,23,42	48,68	59,102	145	84,87	182	56	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 178, 179, 180, 181, 207, 208	ROD, LTM
SS28	1,2,11,20,23,42	48,68	59,102	145	84,87	182	56	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 178, 179, 180, 181,207, 208	ROD, LTM

Report Numbers (see Table B-2)									
		RI/FS							
Site I.D.	PA/SI	Work Plans	RI	FS	RD/RA	DD/RODs	IRA	Other	Comments
SS29	20	92				61,205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS30	27,47, 81	93	138		134, 163, 164	205, 206		136, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	EE/CA, NFA ROD
SS31	29	93			28	78, 205, 206	46	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS32	29,47, 81	93				107, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS33	31				28	58, 205, 206	46	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS34	41	93				108, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
SS63	44,47, 81	68	102	145		182		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 178, 179, 180, 181, 207, 208	ROD, LTM
SS65	47,57, 81	93	138		133, 140, 212			136, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	AC, Design, NFA ROD
FT35	1,2,11,18,23,42	48,80,83	63,104			112, 123, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
FT36	1,2,11,18,23,42	48,83	63,103			113, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
FT37	1,2,11,18,23,42	48,83	65,103			121, 124, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
FT38	1,2,11,18,23,42	48,83	65,103			114, 121, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
FT39	11,18,23,42	48,83	63,103			121, 125, 146	50	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT40	1,2,11,16,42,23	48				62, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT41	1,2,11,16,42,23	48				62, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFRAP
OT42	1,2,11,16,42,23	48,92	192			132, 143, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD

Report Numbers (see Table B-2)									
		RI/FS							
Site I.D.	PA/SI	Work Plans	RI	FS	RD/RA	DD/RODs	IRA	Other	Comments
OT43	1,2,11,16,42,23	48				205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT44	1,2,11,16,42,23	48,95, 165	139			205, 206, 213, 214, 215		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
DP45	1,2,11,15,42,23	48	102			109, 142, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
DP46	1,2,11,15,42,23	48,100	150			205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
DP47	27,47, 81	95	139			73, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
DP48	38,47, 81		104			73, 123, 146	52	151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
ST49	11,21,23,42	48,100	150			205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFRAP
ST50	11,21,23,42	48,93	138		134, 163, 164	205, 206		136, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	EE/CA, NFA ROD
ST51	30,32	92				130, 143, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
ST52	34	92				205, 206		60, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
ST53	39,47, 81		104			77, 123, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
ST64	49	92				131, 143, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT54	1,2,11,16,42,23	48,68	102			110, 142, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT55	40,47, 81					74, 142, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT56	40,47, 81		102			74, 142, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
OT57	25,47, 81		102			74, 142, 146		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD

Report Numbers (see Table B-2)									
Site I.D.	PA/SI	RI/FS Work Plans	RI	FS	RD/RA	DD/RODs	IRA	Other	Comments
OT59					117			116, 151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	BMP, LTM
SD58	24,47, 81	100	150			75, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180, 209	NFA ROD
RW60	1,2					66, 205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
RW61	1,2	95				205, 206		151, 152, 153, 154, 155, 156, 157, 169, 170, 171, 172, 173, 176, 177, 179, 180	NFA ROD
DP66	167	166				205, 206			NFA ROD
DP67	168					205,206			NFA ROD

WIMS-ES Site ID	Description	ERPIMS Site ID	ERPIMS Site Name (if different than WIMS-ES name)
LF1	Landfill 1	18	
LF2	Landfill 2	10	
LF3	Landfill 3	11	Landfills 3, 4, 6, and 7.
LF4	Landfill 4	58	Landfills 3, 4, 6, and 7.
LF5	Landfill 5	8	
LF6	Landfill 6	59	Landfills 3, 4, 6, and 7.
LF7	Landfill 7	60	Landfills 3, 4, 6, and 7.
LF8	Landfill 8	2	
LF9	Landfill 9	13	
LF10	Landfill 10	1	
LF11	Landfill 11	7	
LF12	Landfill 12	5	
LF13	Landfill 13	25	
LF14	Earthfill Disposal Zone 1	30	
LF15	Earthfill Disposal Zone 2	31	
LF16	Earthfill Disposal Zone 3	32	
LF17	Earthfill Disposal Zone 4	33	
LF18	Earthfill Disposal Zone 5	34	
LF19	Earthfill Disposal Zone 6	35	
LF20	Earthfill Disposal Zone 7	36	
LF21	Earthfill Disposal Zone 8	37	
LF22	Earthfill Disposal Zone 9	38	
LF23	Earthfill Disposal Zone 10	39	
LF24	Earthfill Disposal Zone 11	40	
LF25	Earthfill Disposal Zone 12	41	
SS26	Spill Site 1	3	FTA 3 and 4/Spill No. 1.
SS27	Spill Site 2	4	POL Spill No. 2.
SS28	Spill Site 3	6	POL Spill No. 3.
SS29	Spill Site 4	47	
SS30	Spill Site 5	48	
SS31	Spill Site 6	49	
SS32	Spill Site 7	50	
SS33	Spill Site 8	51	
SS34	Spill Site 9	52	
FT35	Fire Training Area 1	9	

Table B-4
WIMS-ES and ERPIMS Site Identifications
MAP (March 1999)
Wright-Patterson AFB OH

WIMS-ES Site ID	Description	ERPIMS Site ID	ERPIMS Site Name (if different than WIMS-ES name)
FT36	Fire Training Area 2	12	Fire Training Areas No. 2 and 5.
FT37	Fire Training Area 3	3	FTA 3 and 4/Spill No. 1.
FT38	Fire Training Area 4	56	FTA 3 and 4/Spill No. 1.
FT39	Fire Training Area 5	57	Fire Training Areas No. 2 and 5.
OT40	Central Heating Plant 1, Bldg. 66	19	
OT41	Central Heating Plant 2, Bldg. 271	15	
OT42	Central Heating Plant 3, Bldg. 170	20	
OT43	Central Heating Plant 4, Bldg. 1240	23	
OT44	Central Heating Plant 5, Bldg. 770, DRMO	24	
DP45	Burial Site 1	16	Chemical Burial Site 1.
DP46	Burial Site 2	17	Chemical Burial Site 2.
DP47	Burial Site 3	28	
DP48	Burial Site 4	29	
ST49	Underground Storage Tank, Bldg. 4020	26	Underground Storage Tank 1.
ST50	Underground Storage Tanks, Bldg. 71A	27	Underground Storage Tank 2.
ST51	Tank Farm 49A	63	
ST52	East Ramp Tank Removal	None	
ST53	Gravel Lake Tanks	54	
OT54	Long-Term Coal Storage Area	14	Coal storage pile.
OT55	Temporary Coal Storage Pile	43	
OT56	Coal Storage Bldg. 89	44	
OT57	Coal and Chemical Storage Area	45	
SD58	Chemical Disposal Area	46	
OT59	Areas A, B, C	None	
RW60	Radioactive Waste Burial Site	21	
RW61	Deactivated Nuclear Reactor	22	
LF62	Landfill 14	42	
SS63	Spill Site 10	53	
ST64	Underground Storage Tank, Bldg. 119	62	
SS65	Spill Site 11	55	

WIMS-ES Site ID	Description	ERPIMS Site ID	ERPIMS Site Name (if different than WIMS-ES name)
DP66	Burial Site 5	pending	
DP67	Burial Site 6	pending	

APPENDIX C
ROD SUMMARIES

Appendix C
Records of Decision Summaries

This appendix provides a summary of remedy selection records. These summaries include the name and date of the signed ROD for the National Priority List sites.

The following defines No Further Action Planned (NFRAP) Categories: Category I, where no contamination found; Category II, where contaminant concentrations did not exceed ARARs; Category III, where the levels of contamination did not pose risk to human health or the environment; Category IV, where removal, treatment, containment, or other appropriate method was determined to be satisfactory; and LTM, where monitoring has confirmed that there is no longer a threat to human health or the environment from contamination left in place.

Document Type	Site WIMS-ES I.D.	Site Name	Threat/ Problem	Selected Remedy	NFRAP Category	USAF Sign Date	U.S. EPA Sign Date	OEPA Sign Date
ROD	LF 14	Earth Fill Disposal Zone 1	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	LF 15	Earth Fill Disposal Zone 2	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 16	Earth Fill Disposal Zone 3	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 18	Earth Fill Disposal Zone 5	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 19	Earth Fill Disposal Zone 6	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 20	Earth Fill Disposal Zone 7	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 21	Earth Fill Disposal Zone 8	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 23	Earth Fill Disposal Zone 10	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LF 24	Earth Fill Disposal Zone 11	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	LF 25	Earth Fill Disposal Zone 12	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	SS 29	Spill Site 4	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	SS 31	Spill Site 6	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	SS 33	Spill Site 8	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	OT 40	Central Heating Plant 1	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	OT 41	Central Heating Plant 2	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	DP 47	Burial Site 3	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	DP 48	Burial Site 4	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	ST 52	East Ramp UST	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	ST 53	Gravel Lake Tanks	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	OT 55	Temporary Coal Storage Area	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96

Table C-1
ROD Summary
MAP (March 1999)
Wright-Patterson AFB OH

Document Type	Site WIMS-ES I.D.	Site Name	Threat/ Problem	Selected Remedy	NFRAP Category	USAF Sign Date	U.S. EPA Sign Date	OEPA Sign Date
ROD	OT 56	Coal Storage Building 89	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	LF 5	Landfill 5	Exposed waste/ARAR compliance	Capping /O&M/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	LF 11	Landfill 11	Cap maintenance ARAR compliance	Capping/O&M/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	OT 57	Coal and Chemical Storage Area	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	SD 58	Chemical Disposal Area	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
EE/CA	OT 59	Areas A, B, C Groundwater	LTM	Originally created for basewide groundwater contamination and monitoring. Administratively removed from list of active operable units in June 1992 because it was decided to address groundwater within the OUs. However, in 1994 the groundwater operable unit concept was revisited and with agency concurrence, all basewide groundwater contamination concerns were consolidated into the basewide monitoring program (BMP-LTM).		N/A	N/A	N/A
ROD	RW 60	Radioactive Waste Burial Site	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	LFs 8 and 10	Landfills 8 and 10	Landfill leachate and gas migration	Capping, landfill gas and leachate collection and treatment	IV	7/15/93	7/15/93	7/15/93
ROD	SS 32	Spill Site 7	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	SS 34	Spill Site 9	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98

Table C-1
ROD Summary
MAP (March 1999)
Wright-Patterson AFB OH

Document Type	Site WIMS-ES I.D.	Site Name	Threat/ Problem	Selected Remedy	NFRAP Category	USAF Sign Date	U.S. EPA Sign Date	OEPA Sign Date
ROD	DP 45	Burial Site 1	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	OT 54	Long-term Coal Storage Pile	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	LFs 8 and 10	Landfills 8 & 10 Offsource OU and Final Remedial	No threats identified	O&M/NFA	II	6/30/94	6/30/94	6/30/94
ROD	SS 26	Spill Site 1	No threats identified	NFA	III	9/30/96	9/30/96	9/30/96
ROD	FT 35	Fire Training Area 1	No threats identified	NFA	III	9/30/96	9/30/96	9/30/96
ROD	FT 36	Fire Training Area 2	No threats identified	NFA	III	9/30/96	9/30/96	9/30/96
ROD	FT 38	Fire Training Area 4	No threats identified	NFA	III	9/30/96	9/30/96	9/30/96
ROD	LF 62	Landfill 14	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	OT42	HP3 and battery buried site	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	ST51	Tank Farm 49A	No threats identified	NFA	IV	9/30/96	9/30/96	9/30/96
ROD	ST64	UST119	No threats identified	NFA	IV	9/30/96	9/30/96	9/30/96
ROD	FT37	Fire training area 3	No threats identified	NFA	III	9/30/96	9/30/96	9/30/96
ROD	FT39	Fire training area 5	No threats identified	NFA	IV	9/30/96	9/30/96	9/30/96
ROD	LF 1	Landfill 1	Cap maintenance ARAR compliance	Capping /O&M/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	LF 2	Landfill 2	Cap maintenance ARAR compliance	Capping/O&M/NFA	IV	9/28/98	9/28/98	9/28/98

Table C-1
ROD Summary
MAP (March 1999)
Wright-Patterson AFB OH

Document Type	Site WIMS-ES I.D.	Site Name	Threat/ Problem	Selected Remedy	NFRAP Category	USAF Sign Date	U.S. EPA Sign Date	OEPA Sign Date
ROD	LF 4	Landfill 4	Methane monitoring	LTM-methane	IV	9/28/98	9/28/98	9/28/98
ROD	LF 3	Landfill 3	Methane monitoring	LTM-methane	IV	9/28/98	9/28/98	9/28/98
ROD	LF 7	Landfill 7	Cap maintenance/ methane monitoring ARAR compliance	Capping/O&M/NFA LTM-methane	IV	9/28/98	9/28/98	9/28/98
ROD	LF 9	Landfill 9	Cap maintenance ARAR compliance	Capping/O&M/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	SS 27	Spill Site 2	BTEX	Natural Attenuation LTM	IV	9/30/97	9/30/97	9/30/97
ROD	SS 28	Spill Site 3	BTEX	Natural Attenuation LTM	IV	9/30/97	9/30/97	9/30/97
ROD	SS 63	Spill Site 10	BTEX	Natural Attenuation LTM	IV	9/30/97	9/30/97	9/30/97
ROD	LF 12	Landfill 12	Exposed Waste Source Control	Excavation and off-site disposal/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	LF17	Earthfill Disposal Zone 4	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	LF22	Earthfill Disposal Zone 9	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	SS30	Spill Site 5	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	OT43	Central Heating Plant 4	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	OT44	Central Heating Plant 5	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	DP46	Burial Site 2	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98
ROD	ST49	UST 4020	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	ST50	UST 71A	No threats identified	NFA	IV	9/28/98	9/28/98	9/28/98
ROD	RW61	Deactivated Nuclear Reactor	No threats identified	NFA	II	9/28/98	9/28/98	9/28/98

Table C-1
ROD Summary
MAP (March 1999)
Wright-Patterson AFB OH

Document Type	Site WIMS-ES I.D.	Site Name	Threat/ Problem	Selected Remedy	NFRAP Category	USAF Sign Date	U.S. EPA Sign Date	OEPA Sign Date
ROD	DP66	Burial Site 5	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	DP67	Burial Site 6	No threats identified	NFA	III	9/28/98	9/28/98	9/28/98
ROD	SS65	Spill Site 11	No threats identified	French drain/O&M/NFA	IV	9/28/98	9/28/98	9/28/98
ROD	LF13	Landfill 13	No threats identified	NFA	II	9/30/96	9/30/96	9/30/96
ROD	ST64	UST 30119	No threats identified	NFA	IV	9/30/96	9/30/96	9/30/96

Notes:
LTM =Long-Term Monitoring
N/A =Not Applicable
AC =Action Memorandum
ROD =Record of Decision
NFA =No Further Action (No Action ROD)
O&M =Operation & Maintenance

Table C-1
ROD Summary
MAP (March 1999)
Wright-Patterson AFB OH

APPENDIX D
RECORDS OF DECISION

Appendix D

INTRODUCTION

This appendix provides the Declaration pages of the No Action Records of Decision (ROD) for Landfills 8 & 10 (Off-Source and Source Control), OU2 (Spill Sites 2, 3, & 10), the 21 No Action Sites and the 41 No Action Sites. The complete text of the RODs can be found in the Administrative Record at Wright-State University, Fairborn OH. In previous MAP updates Decision Documents were utilized in this section, however, RODs have superceded the Decision Documents.

I. THE DECLARATION

A. Site Name and Location

Source Control Operable Unit - Landfills 8 and 10
Wright-Patterson AFB
Greene County, Ohio.
(CERCLIS Operable Unit 1, Event 2)

B. Statement of Basis and Purpose

This decision document presents the selected remedial action for the Source Control Operable Unit, Landfills 8 and 10, at Wright-Patterson AFB, developed in accordance with CERCLA, as amended by SARA, and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the administrative record for the site. The attached index identifies the items which comprise the administrative record upon which the selection of the remedial action is based.

The State of Ohio has concurred on the selected remedy.

C. Assessment of the Site

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

D. Description of Selected Remedy

Landfills 8 and 10 comprise the first of twelve operable units identified for cleanup at Wright-Patterson AFB, Ohio. This ROD addresses the sources of the contamination and any threat posed by migration of contamination to groundwater beneath Landfills 8 and 10, the principle threats to the site. Based on the proximity of homes to Landfills 8 and 10, WPAFB, OEPA and USEPA jointly deemed that a remedial action aimed at controlling any current or potential risks posed by the contamination migrating from the landfills was warranted. WPAFB and the regulatory agencies agreed there was no reason to delay that portion of the overall site remedy dealing with the landfills themselves while awaiting sampling results from areas outside, but potentially affected by, Landfills 8 and 10. A subsequent ROD will address potential off-source contamination for the operable unit.

The remedial actions selected in this ROD incorporate the following components:

- Low Permeability Clay Cap.
- Leachate Collection and Treatment.
- Landfill Gas Collection and Treatment.
- Public Water Supply for Private Well Users.
- Operation and Maintenance and Performance Monitoring.
- Disposal of Nonhazardous Drill Cuttings under the Clay Cap.

E. Statutory Determination

The selected remedy is protective of human health and environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable. However, because treatment of the principal threats of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element. Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide protection of human health and the environment.

ALAN P. BABBITT
Deputy for Hazardous Materials
and Waste
Deputy Assistant Secretary
of the Air Force
(Environment, Safety and
Occupational Health)

Valdas V. Adamkus
Regional Administrator
USEPA Region V

Ohio Environmental Protection Agency
JAN A. CARLSON, Acting Chief
Division of Emergency and
Remedial Response

RECORD OF DECISION
OFF-SOURCE OPERABLE UNIT - LANDFILLS 8 & 10

I. THE DECLARATION

A. Site Name and Location

Off-Source Operable Unit - Landfills 8 and 10
Wright-Patterson AFB
Greene County, Ohio
(CERCLIS Operable Unit 1, Event 4)

B. Statement of Basis and Purpose

This decision document presents the selection of the no action remedial alternative for the Off-Source Operable Unit and adoption of the previously approved Source Control remedial action as the final cleanup remedy for the Landfills 8 & 10 site, at Wright-Patterson AFB. The selection process was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Contingency Plan (NCP). This decision is based on the administrative record for the site. All documents, correspondence, and other resources which comprise the administrative record upon which this decision is based are identified in the attached index.

C. Description of Selected Remedy/Rationale For No Action

Landfills 8 & 10 comprise the first of eleven operable units identified for Remedial Investigation/Feasibility Study (RI/FS) at Wright-Patterson AFB, Ohio. Past waste disposal sites on-base have been grouped into discreet operable units based on geographical proximity and similarities in waste characteristics. Separation of the Landfills 8 & 10 site into two operable units, one which addressed the source and the other which addressed areas outside (i.e., off-source) but potentially affected by the landfills, enabled the base to accelerate the cleanup effort. Both Wright-Patterson and the regulatory agencies agreed there was no reason to delay that portion of the overall site remedy dealing with the landfills themselves while awaiting sampling results from areas outside, but potentially affected by the site. The previous Record of Decision (ROD) for the Source Control Operable Unit was approved in July 1993 and addressed the sources of contamination and the threat posed by migration of contamination to groundwater. The Focused Remedial

Investigation Report and Focused Feasibility Study for the landfills themselves formed the basis of this previous ROD. The findings of the follow-on Off-Source RI Report revealed that there were no new pathways of exposure presenting a risk which had not already been identified during the previous Focused RI, precluding the need for any additional feasibility studies. The Source Control remedial action is comprehensive and will ultimately eliminate all exposure pathways where a risk was identified.

The comprehensive remedial action which has been previously approved incorporates the following components:

- Low Permeability Clay Cap
- Leachate Collection and Treatment
- Landfill Gas Collection and Treatment
- Public Water Supply for Private Well Users
- Operation and Maintenance and Performance Monitoring
- Disposal of Nonhazardous Drill Cuttings under the Clay Cap
- Removal of Asphalt Slabs from Surface Water Stream
- Site Access Restrictions

RECORD OF DECISION
FOR 21 INSTALLATION RESTORATION PROGRAM SITES AT WRIGHT-PATTERSON AFB

1.0. THE DECLARATION

1.1. Site Name and Location: Wright-Patterson Air Force Base (WPAFB)
Greene and Montgomery Counties, Ohio.

WPAFB is listed on the National Priorities List (NPL) and is not scheduled for closure under the Base Realignment and Closure program. The following is a list of 21 individual sites within five Operable Units (OUs) which are recommended for No Action (NA):

OU2: Burial Site 1 (BS1); Long-Term Coal Storage Area (LTCSA); Temporary Coal Storage Pile (TCSP); Coal and Chemical Storage Area (CCSA); and Bldg 89 Coal Storage Pile (B89CSP)

OU3: Landfill 14 (LF14); Fire Training Areas 2, 3, 4 and 5 (FTA2, FTA3, FTA4, FTA5); Spill Site 1 (SS1); Earthfill Disposal Zones 11 and 12 (EFDZ11, EFDZ12)

OU5: Fire Training Area 1 (FTA1); Gravel Lake Tank Site (GLTS); Burial Site 4 (BS4)

OU6: Earthfill Disposal Zone 1 (EFDZ1)

OU10: Central Heating Plant 3 and associated Battery Burial Site (CHP-3); Landfill 13 (LF13); Tank Farm 49A (TF49A); Underground Storage Tanks at Building 30119 (UST30119)

1.2. Statement of Basis and Purpose

This decision document presents the selection of the NA remedial alternative for twenty-one Installation Restoration Program (IRP) Sites at WPAFB. The selection process was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The lead agency (WPAFB), and support agencies, (USEPA and OEPA) support the decision for NA at these sites. This decision is based on the Administrative Record for all of the sites. All documents, correspondence, and other resources which comprise the Administrative Record upon which this decision is based are identified in the attached index.

1.3. Description of Selected Rationale For NA

WPAFB has selected the NA remedy for each of the 21 listed sites at WPAFB listed in section 1.1 above. The NA decision for these sites deals only with soils at the sites. Remedies for groundwater, surface water, and sediments at the NA sites will be addressed under the Basewide Monitoring Program (BMP). Under this program, WPAFB will study the types and movements of contaminants in groundwater, surface water, and sediment across the base. The BMP will examine all of the OUs as well as parts of the base that do not contain hazardous waste sites. Section 2.4 discusses the role of this ROD and how it fits into the overall Base cleanup strategy in more detail.

WPAFB, USEPA, and OEPA have determined that the following land uses upon which this ROD is based are the current land use scenarios for these five OUs. In addition, these land use scenarios are highly likely to remain the same in the future.

OPERABLE UNIT	LAND USE
OU2	Recreational and Industrial
OU3	Recreational and Light Industrial
OU5	Commercial/Industrial/Recreational/Open
OU6	Agricultural
OU10	Light Industrial/Office

The selected remedy of NA includes the following currently existing conditions:

Institutional controls and access/deed restrictions - all of these sites are located within an active military installation with limited access. Additionally, some sites, such as FTA5, have fencing around them, further limiting access. Digging/excavation at any of these sites, especially those with waste/contamination left in place (for example, LF13, CHP-3, FTA5), is currently restricted by the nature of the installation and should remain minimal. If, in the future, portions of the Base are sold for residential development etc., the appropriate land use would need to be evaluated for those specific applications. NA is protective of public health because there is no current exposure to the subsurface contamination, however low, and future exposure is considered extremely unlikely because of the nature of the land uses.

1a. THE DECLARATION – USAF

1a.1 SITE NAME AND LOCATION

Spill Sites 2, 3, and 10, Operable Unit 2
Wright-Patterson Air Force Base
Greene and Montgomery counties, Ohio.

1a.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) document presents the selected remedial action to reduce the risks posed by subsurface soil and groundwater at Operable Unit 2 Spill Sites 2, 3, and 10 in the Petroleum, Oil, and Lubricants Area vicinity at Wright-Patterson Air Force Base (WPAFB). The selection of the remedial action was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for the site. All documents, correspondence, and other resources that comprise the Administrative Record upon which this decision is based are identified in Appendix A.

The lead agency, WPAFB, supports the selected remedy at this site.

1a.3 ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

1a.4 DESCRIPTION OF THE SELECTED REMEDY

This ROD documents the selected remedy for subsurface soil and groundwater contamination at Spill Sites 2, 3, and 10, which are part of Operable Unit (OU) 2. OU 2 represents one component of a comprehensive environmental investigation and cleanup presently being performed under the Installation Restoration Program (IRP) at WPAFB. The IRP has divided the Base into 11 OUs, each with several IRP sites located in close proximity to each other. In most cases, the Remedial Investigations (RIs) conducted at the OUs addressed only the source areas. Groundwater, surface water, and sediment flowing from these areas will be monitored and addressed under the Basewide Monitoring Program.

Three RODs have been issued as a result of the RIs at WPAFB. These are the "On-Source" and "Off-Source" RODs for OU 1 and the No Action ROD for soil at 21 IRP sites. The No Action ROD addresses soil at sites across WPAFB, including 5 sites from OU 2; the Coal and Chemical Storage Area, Temporary Coal Storage Pile, Long-Term Coal Storage Area, Burial Site 1, and the Building 89 Coal Storage Pile. In addition, several IRP sites have foregone the traditional Feasibility Study (FS) process and are being addressed with presumptive remedies.

The selected remedy for subsurface soil and groundwater at Spill Sites 2, 3, and 10 in the Petroleum Oil and Lubricants (POL) Storage Area vicinity is:

- in situ biodegradation of contaminants in subsurface soil,
- natural attenuation of contaminants in groundwater,
- O&M of existing recovery systems,
- institutional controls, and
- subsurface soil and groundwater monitoring.

These actions address the potential principal threats posed by contaminants in the subsurface soil and groundwater at Spill Sites 2, 3, and 10.

1a.5 STATUTORY DETERMINATION

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy uses permanent solutions and alternative treatment to the maximum extent practicable. The selected remedy satisfies the statutory preference for treatment as a principal element even though the treatment occurs passively and naturally. Mechanical treatment of the groundwater was not selected because (1) data indicate the groundwater beneath the spill site has the capacity to biodegrade the hydrocarbons before a potential receptor can be reached and (2) institutional controls are already in place to prevent exposure to subsurface soil. Additionally, supplemental sampling conducted in May 1997 indicated that in-situ biodegradation and natural attenuation processes are effectively occurring in soil and groundwater, respectively.

Because the remedy will result in the continued presence of hazardous substances on the site above health-based levels, a review will be conducted within 5 years of commencement of the remedial action to ensure the remedy continues to provide adequate protection of human health and the environment in accordance with NCP Section 300.430 (f)(4)(ii). This 5 year review will be performed as part of the Basewide Monitoring Program.

_____ _____

Date

RECORD OF DECISION
FOR 41 INSTALLATION RESTORATION PROGRAM SITES AT WRIGHT-PATTERSON AFB

1.0 THE DECLARATION

1.1 Site Name and Location: Wright-Patterson Air Force Base (WPAFB)
Greene and Montgomery Counties, Ohio.

WPAFB is listed on the National Priorities List (NPL) and is not scheduled for closure under the Base Realignment and Closure program. The following is a list of the forty-one (41) sites that are recommended for No Action (NA):

Landfill 1	Central Heating Plant 2	Burial Site 2
Landfill 2	Central Heating Plant 4	Burial Site 3
Landfill 3	Central Heating Plant 5	Burial Site 5
Landfill 4	Spill Site 4	Burial Site 6
Landfill 5	Spill Site 5	Building 4020 UST
Landfill 6	Spill Site 6	Chemical Disposal Area
Landfill 7	Spill Site 7	East Ramp UST
Landfill 9	Spill Site 8	Radioactive Waste Burial Site
Landfill 11	Spill Site 9	Deactivated Nuclear Reactor
Landfill 12	Spill Site 11	Explosive Ordnance Disposal Range
Central Heating Plant 1	UST 71A	Earth Fill Disposal Zones 2 through 10

1.2 Statement of Basis and Purpose

This decision document presents the rationale for selection of the NA remedial alternative for 41 Installation Restoration Program (IRP) sites at WPAFB. The selection process was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). WPAFB, the lead agency, and the U.S. Environmental Protection Agency (USEPA) and the Ohio EPA (OEPA), support agencies, recommend the NA remedial alternative for soils at these sites. This recommendation is supported by the Administrative Record for each site. Documents, correspondence, and other resources which are included in the Administrative Record for the sites contained in this ROD are identified in Attachment 1.

1.3 Description of the Selected Remedy: No Action

WPAFB has selected NA as the remedial alternative for each of the 41 sites at WPAFB listed in Section 1.1. The NA decision for these sites deals only with soils; remedies for groundwater, surface water, and sediments at the sites will be addressed under the Basewide Monitoring Program (BMP). Under this program, WPAFB will study the types and movements of contaminants in groundwater, surface water, and sediment across the base. The BMP will

examine all of the IRP sites as well as parts of the Base that do not contain hazardous waste sites. Section 2.4 discusses the role of this ROD and how it fits into the overall Base cleanup strategy in more detail.

WPAFB, USEPA, and OEPA have determined that the land uses upon which this ROD is based are the current land use scenarios for these sites and that these land use scenarios are highly likely to remain the same in the future. Table 1 identifies the land use classification and current use of the 41 sites included in this ROD.

In addition, the selected remedial alternative of NA includes the following currently existing conditions:

- Access restrictions: Most of these sites are located within an active military installation with limited access. Some sites have additional fencing around them, further limiting access.

- Institutional controls: Digging and/or excavating at any of these sites, especially those with waste/contamination left in place (such as the landfills), is currently restricted by the nature of the installation and should remain minimal. Anyone conducting excavations at WPAFB must obtain prior clearance via Civil Engineering Form 103. Maintaining restrictions on excavations at IRP sites would be implemented through this process. Additionally, a process known as *Environment Impact Analysis* is used to screen proposed projects to prevent excavation activities at IRP sites.

- Continued maintenance: For Landfills 1 through 7, 9 and 11, maintenance of the landfill caps will be conducted as described in the Operation and Maintenance Plans specific to each landfill.

- Deed restrictions: If, in the future, portions of the Base are sold, the appropriate land use would need to be evaluated for that specific application. For the Explosive Ordnance Disposal (EOD) Range, restrictions would be placed on the deed to restrict further land use to industrial uses.

The NA remedial alternative is protective of public health because there is no current exposure to subsurface contamination, however low, and future exposure is considered extremely unlikely because of the nature of the land uses.

1

Table 1. Land Use

Site Name	Site Tracking Name	Land Use Classification[1]	Current Land Use
Landfill 1	LF1	O	Undeveloped
Landfill 2	LF2	O	Wooded, undeveloped
Landfill 3	LF3	C	Golf course
Landfill 4	LF4	I	Equipment storage
Landfill 6	LF6	O	Pasture
Landfill 7	LF7	O	Equestrian facility
Landfill 5	LF5	I/O	Recreational
Landfill 9	LF9	O	Undeveloped
Landfill 11	LF11	O	Recreational
Landfill 12	LF12	O	Recreational
Spill Site 5	SP5	I	Research laboratories
Spill Site 6	SP6	C	Building, grass
Spill Site 7	SP7	I	Fuel storage
Spill Site 9	SP9	I	Fuel storage
Spill Site 11	SP11	I	Aircraft Survivability Research Facility
UST71A	UST71A	I	Research laboratories
Earthfill Disposal Zone 2	EFDZ2	I	Undeveloped
Earthfill Disposal Zone 3	EFDZ3	I	Undeveloped
Earthfill Disposal Zone 4	EFDZ4	O/I	Paved streets, grass
Earthfill Disposal Zone 5	EFDZ5	O	Grass
Earthfill Disposal Zone 6	EFDZ6	I	Developed/building site
Earthfill Disposal Zone 7	EFDZ7	O	Paved streets, grass
Earthfill Disposal Zone 8	EFDZ8	O/I	Undeveloped
Earthfill Disposal Zone 9	EFDZ9	O	Undeveloped
Earthfill Disposal Zone 10	EFDZ10	O	Wooded, undeveloped
Burial Site 3	BS3	O	Undeveloped

Site Name	Site Tracking Name	Land Use Classification[1]	Current Land Use
Burial Site 5	BS5	O	Undeveloped
Burial Site 6	BS6	O	Undeveloped
Deactivated Nuclear Reactor	NUC	I	Decommissioned, laboratories, classroom
Spill Site 4	SP4	I	Building/paved streets
East Ramp UST	ERTR	I	Paved/grass
Burial Site 2	BS2	O	Paved/grass
Building 4020 UST	UST4020	I	Paved/grass
Chemical Disposal Area	CDA	I/O	Paved/grass
Central Heating Plant 1	HP1	I	Closed heating plant
Central Heating Plant 2	HP2	I	Closed heating plant
Central Heating Plant 4	HP4	I	Operational heating plant
Central Heating Plant 5	HP5	I	Operational heating plant
Spill Site 8	SP8	I	
Radioactive Waste Burial Site	RADB	O	Undeveloped
Explosive Ordnance Disposal Range	EOD	I	Industrial

1 Based on 1997 Management Action Plan.

I = Industrial, including aircraft maintenance
C = Commercial, including administrative and office
O = Open, including recreational

APPENDIX E
MONITORING WELLS, UST, AND SANITARY SEWER LOCATIONS

Figure E1 is a D-size drawing and was not included in the electronic form of this document because of its size.

Figure E2 is a D-size drawing and was not included in the electronic form of this document because of its size.

Figure E3 is a D-size drawing and was not included in the electronic form of this document because of its size.

Figure E4 is a D-size drawing and was not included in the electronic form of this document because of its size.

I: 70206 DRAWINGS GWATER OU1OFIG8.DGN 3/11/98 DLB

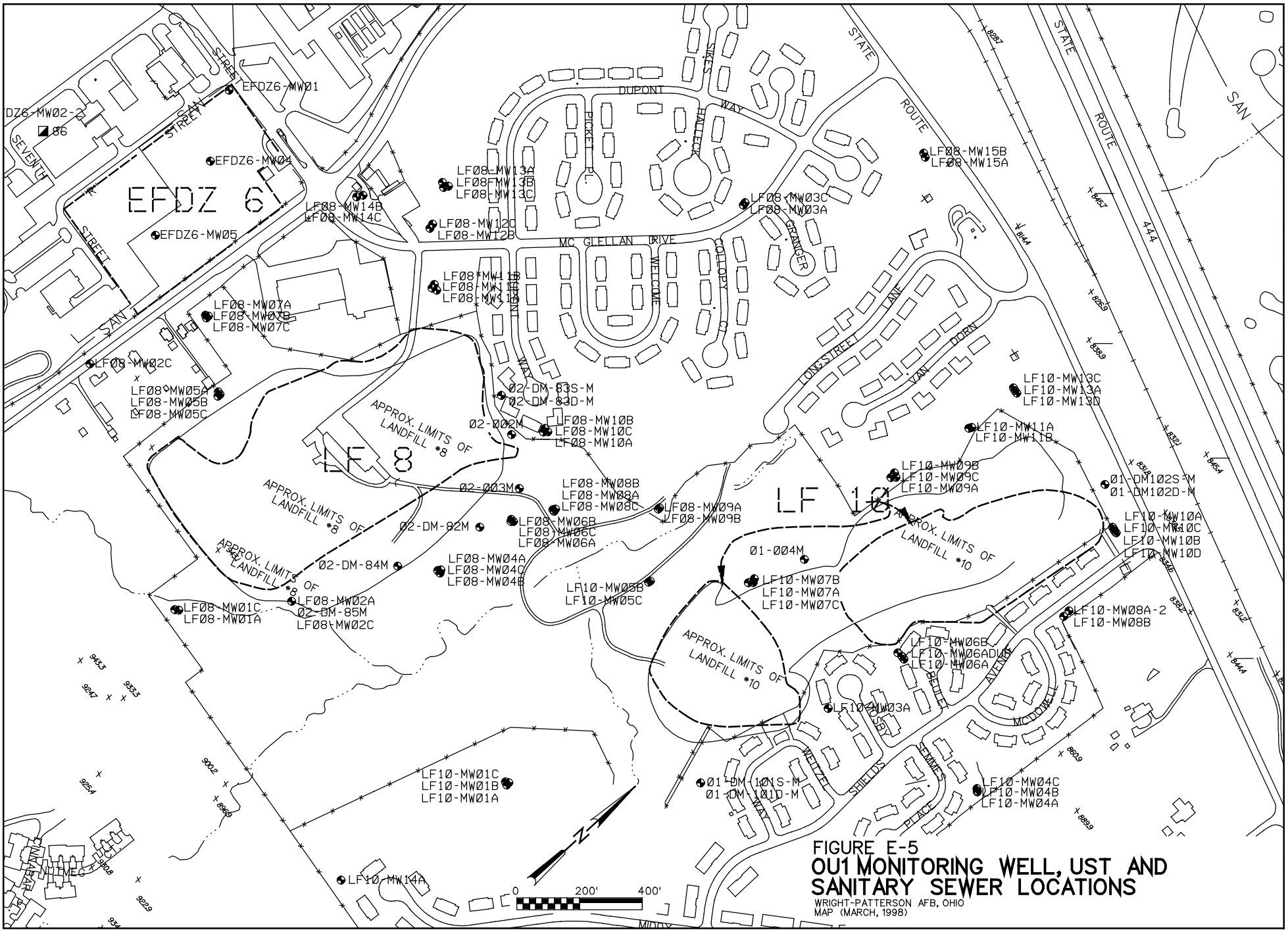


FIGURE E-5
OU1 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I:\70206 DRAWINGS\GWATER\OU1\OFIG2.DGN 3/11/98 DLB

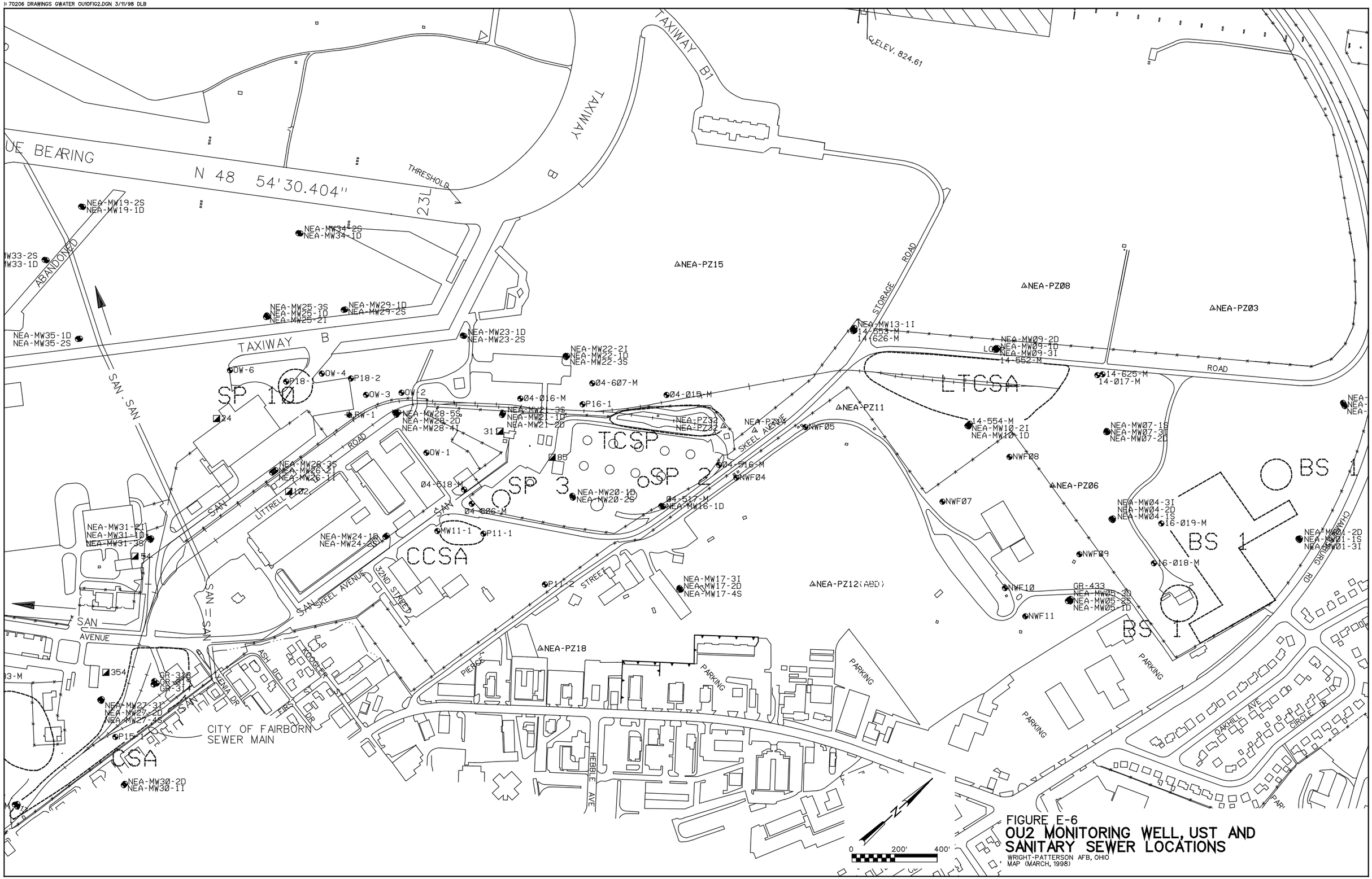


FIGURE E-6
OU2 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

P:\70206 DRAWINGS GWATER OU1OFIGS.DGN 3/11/98 DLB

BATH ROAD
PINE HILL ROAD
STATE ROUTE 4
VALLEY PIKE
SAN
MAD RIVER
LF12:MW17A
LF11:MW12A
LF11:MW12B
07-007
07-609-M
07-520-M
07-006-M
LF11:MW11A
07-521-M
05-DM-123S-M
05-DM-123I-M
05-DM-123D-M
05-DM-122I-M
05-DM-122S-M
05-DM-122D-M
LF12:MW15A
03-515-M
FTA3:MW010
05-DM-124-M
07-008-M
05-DM-121D-M
05-DM-121S-M
05-DM-121I-M
FTA3:MW18B
FTA3:MW18A
03-009-M
FTA3:MW14A
LF 11
LF 14
LF 12
FTA 3
FTA 4
FTA 5
FTA 2
USP 1
EFDZ 11
LF14:MW19B
LF14:MW19A
P19-1
P19-2
P19-3
LF14:MW07A
12-546-M
12-548-M
FTA2:MW03B
FTA2:MW03A
FTA2:MW02B
FTA2:MW02C
FTA2:MW02A
293,294
FTA2:MW004
12-621-M
12-547-M
P9-1
P9-2
P9-3
LF14:MW06B
LF14:MW06C
LF14:MW06A
RIVERVIEW ROAD
FTA2:MW01B
FTA2:MW01A
FTA2:MW01C
FTA3:MW09B
FTA3:MW009
03-514-M
07-519-M
07-608-M
TAXIWAY A
TAXIWAY A
ROAD
1000' OVERRUN
THRESHOLD
ELEV. 805.0'
VHB RUNWAY
12 5931
N
0 200' 400'

FIGURE E-7
OU3 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG6.DGN 3/11/98 DLB

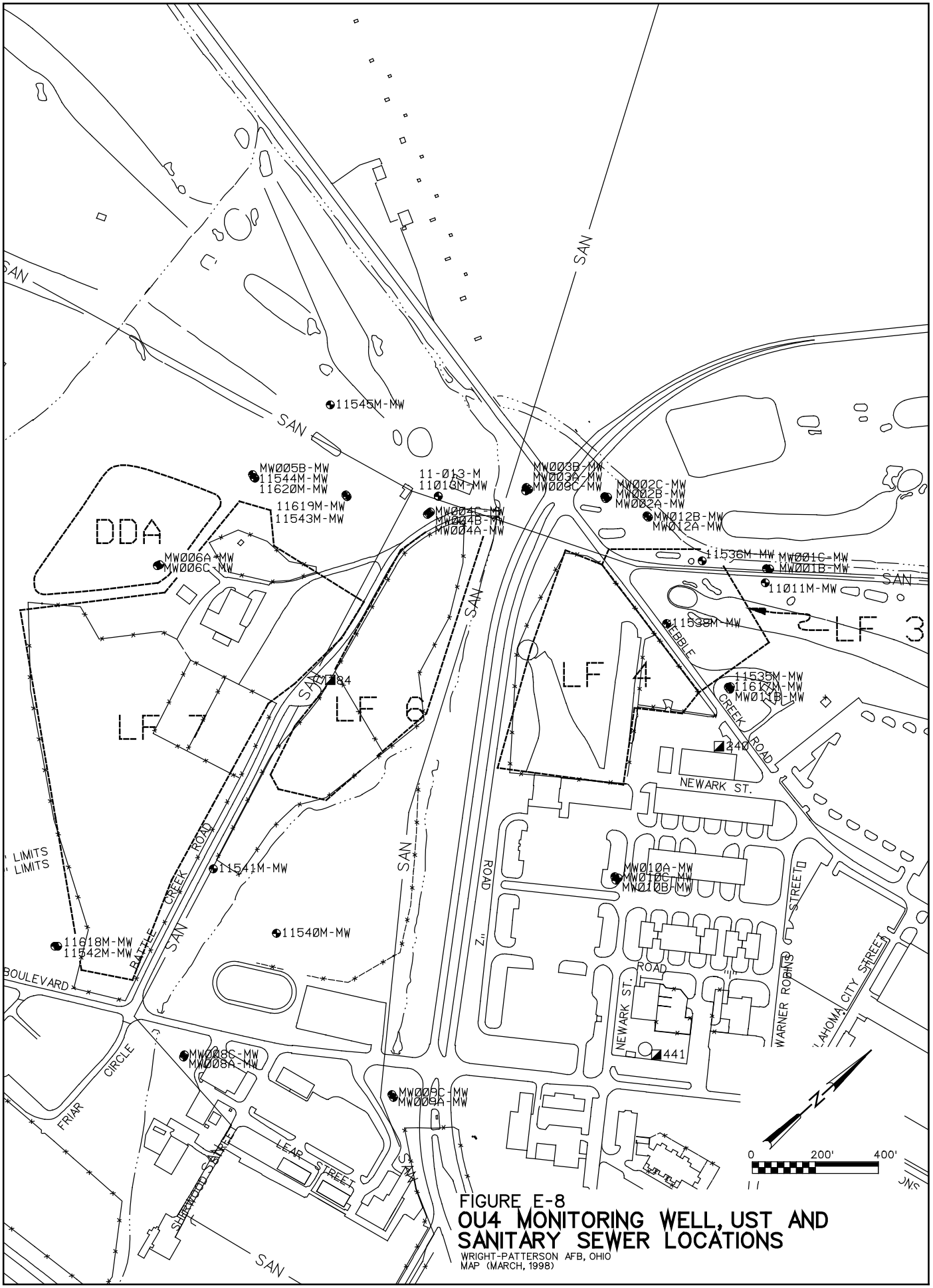


FIGURE E-8

OU4 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS

WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG7.DGN 3/11/98 DLB

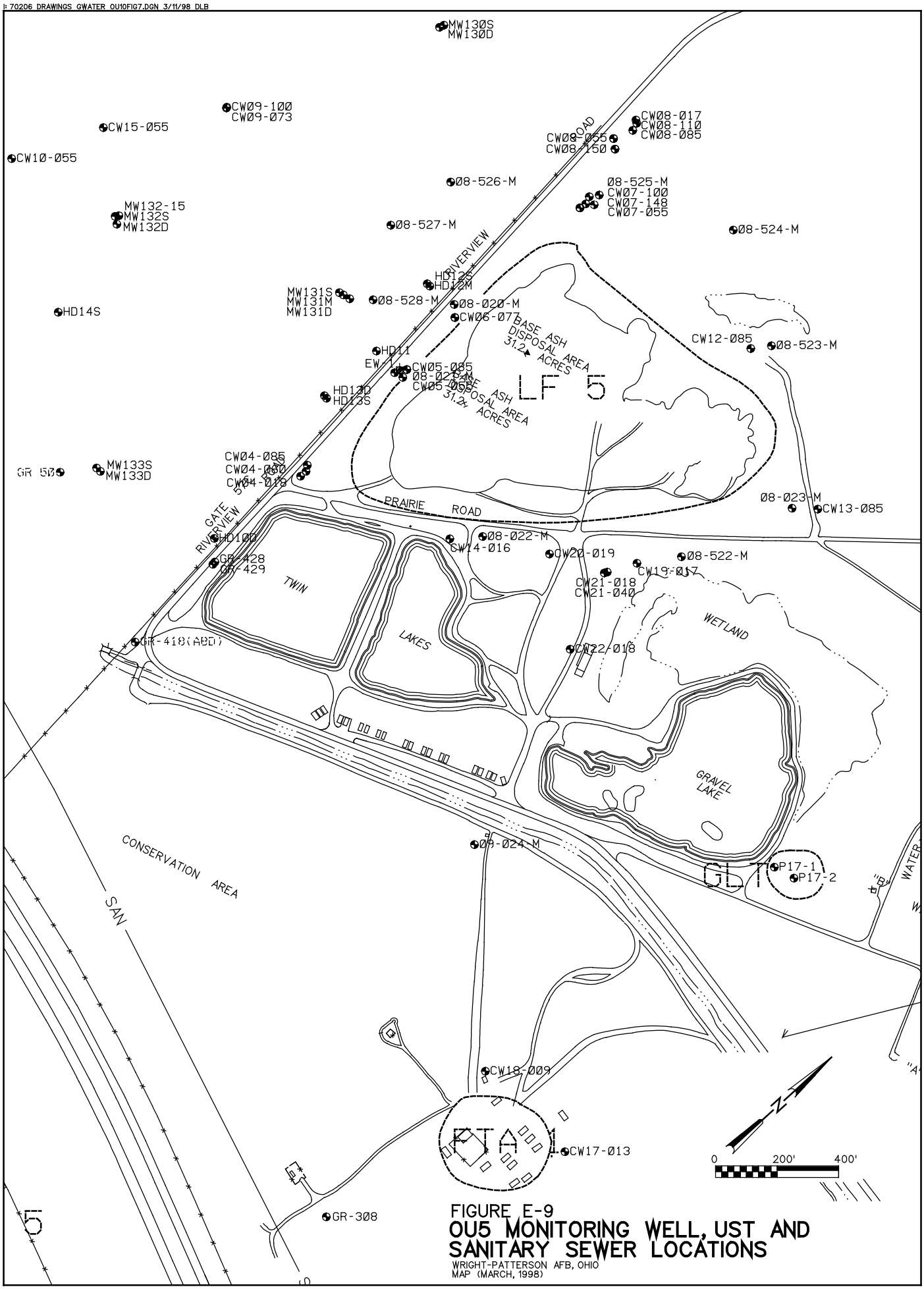


FIGURE E-9

OU5 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS

WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

P:\70206 DRAWINGS GWATER OU10F111.DGN 3/11/98 DLB

TO CITY OF DAYTON
SEWERAGE SYSTEM

GLENDEAN AVENUE

MT-234
MT-239
MT-240
MT-241

MT-235(ABD)
MT-235
MT-237

LW-08
MW-03
LW-05
10-534-M
10-615M
10-533M
LW-4B
MW-05

SAN

TO CITY OF DAYTON
SEWERAGE SYSTEM

DRIVE

EFDZ1-MW02
EFDZ1-MW01C
EFDZ1-MW01B
MT-247

EFDZ 1
EFDZ1-MW03

PERIMETER

MW-06
MT-238
MT-245
MT-246
MT-244
18-559-M
18-560-M
LW-07
ROAD 1
LW-06
MW-02C

MW-4B
MW-4A
LW-03

LF 2
LW-02
WOODMAN
PHOTO TARGET

10-615-M
10-533-M
LW-01
EFDZ1-MW04

MW-7B
MW-7A

MW-01

SPAATZ STREET

E-W RUNWAY BEARING S85° 47'50"W

COBB

ACCESS

PHOTO TARGET

N

0 200' 400'

FIGURE E-10
OU6 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG1.DGN 3/11/98 DLB

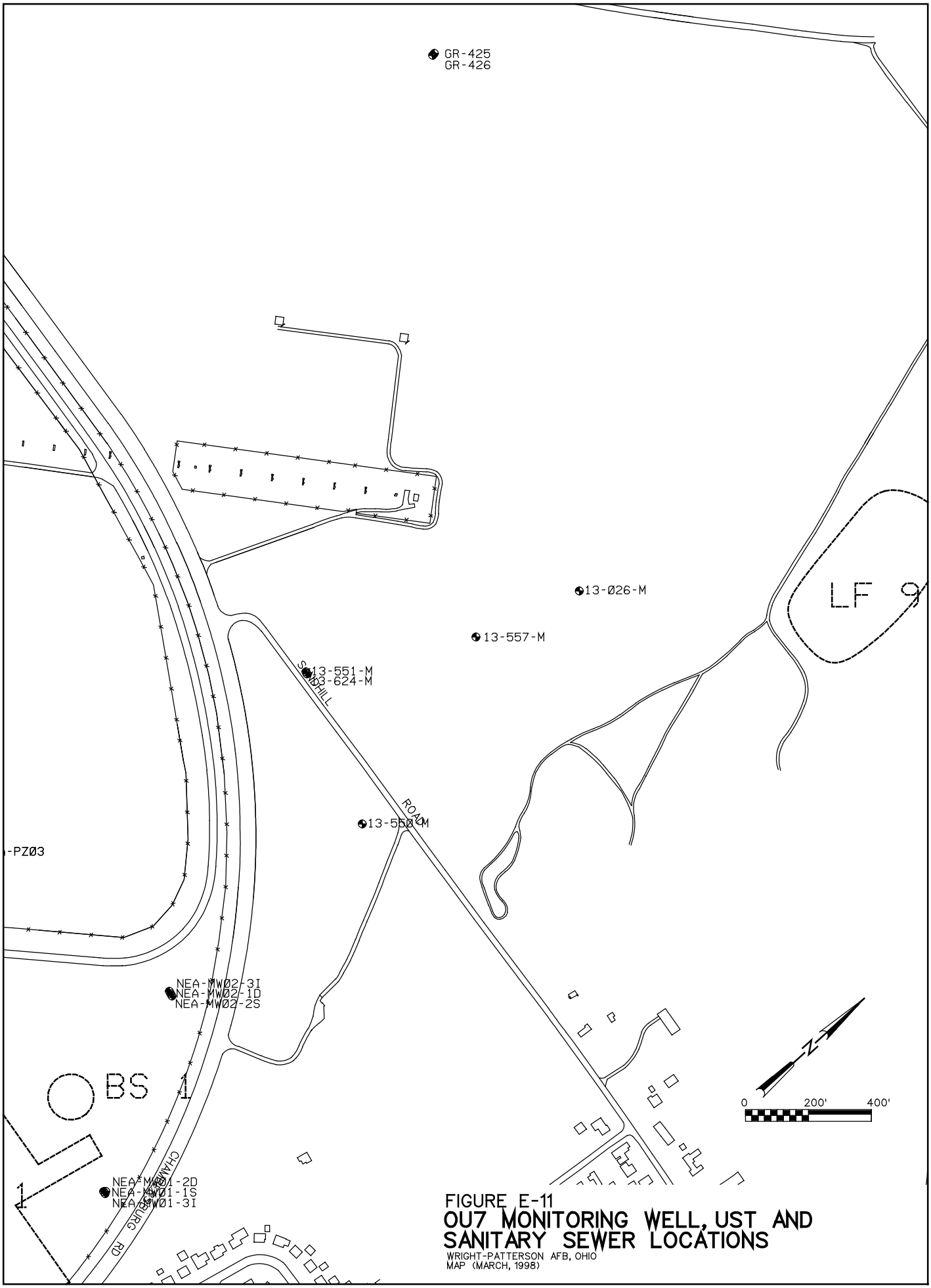


FIGURE E-11
OU7 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10F110.DGN 3/11/98 DLB

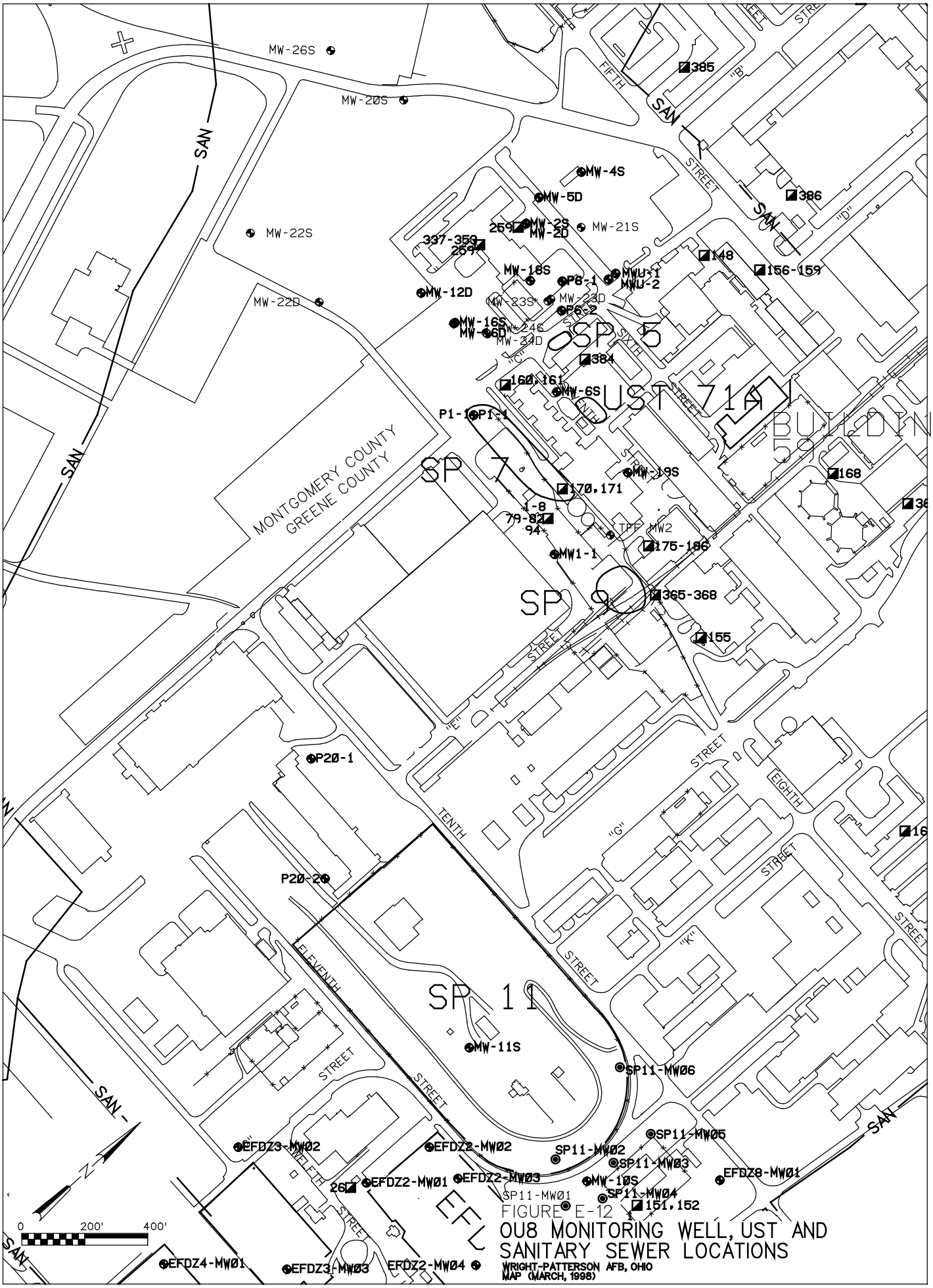


FIGURE E-12

OU8 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS

WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG9 .DGN 3/11/98 DLB

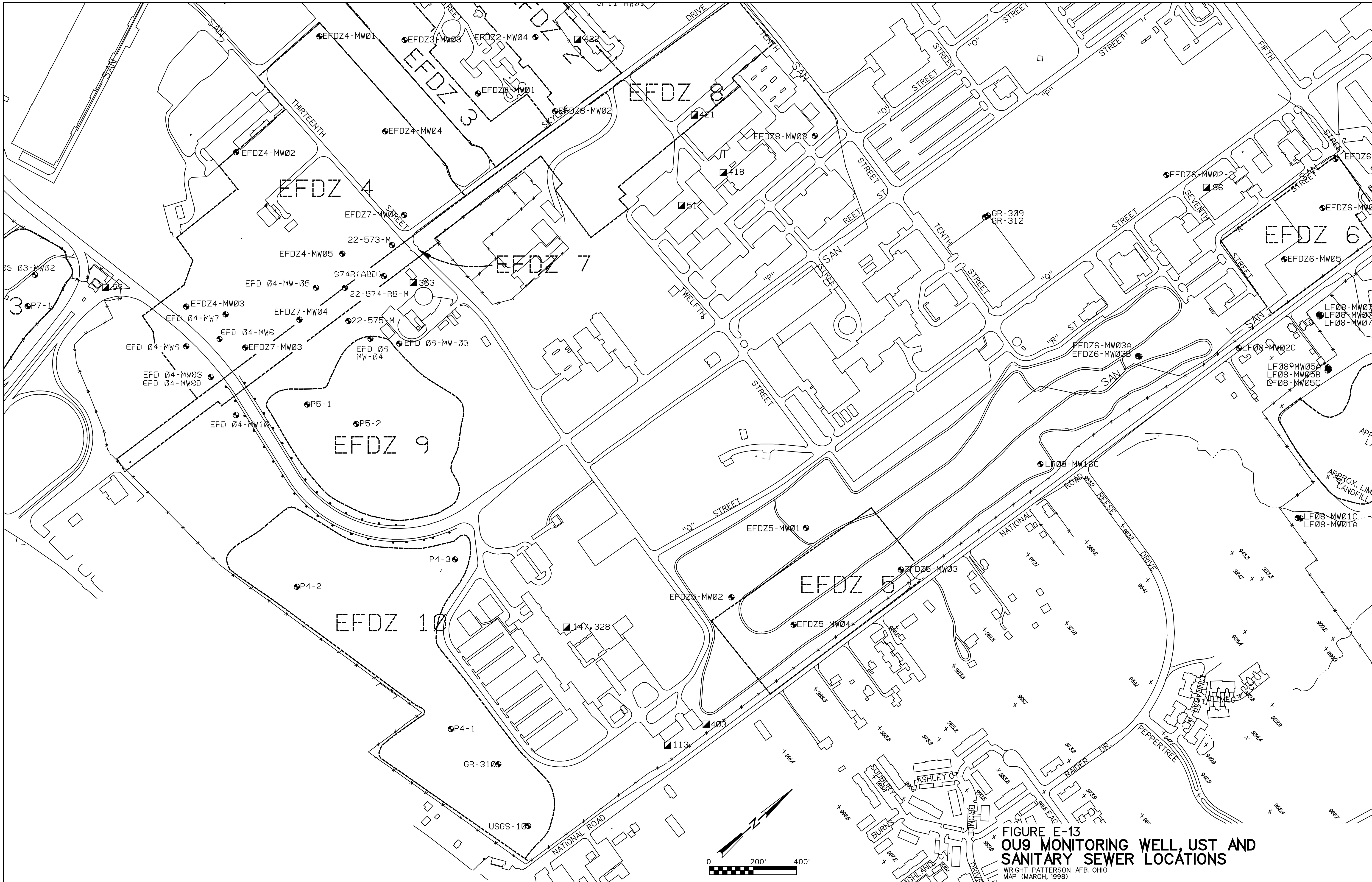

EFDZ 2
EFDZ 3
EFDZ 4
EFDZ 5
EFDZ 6
EFDZ 7
EFDZ 8
EFDZ 9
EFDZ 10
EFDZ4-MW01
EFDZ3-MW03
EFDZ2-MW04
EFDZ3-MW01
EFDZ8-MW02
EFDZ4-MW04
EFDZ4-MW02
EFDZ7-MW01
22-573-M
EFDZ4-MW05
S74R(ABD)
EFD 04-MW-05
22-574-RB-M
EFDZ4-MW03
EFD 04-MW7
EFDZ7-MW04
22-575-M
EFD 04-MW6
EFD 04-MW9
EFDZ7-MW03
EFD 09 MW-04
EFD 09-MW-03
EFD 04-MW8S
EFD 04-MW8D
EFD 04-MW10
P5-1
P5-2
P7-1
P4-3
P4-2
P4-1
GR-310
USGS-10
422
421
418
51
363
59
147,328
403
113
86
EFDZ8-MW03
GR-309
GR-312
EFDZ6-MW02-2
EFDZ6-MW04
EFDZ6-MW05
EFDZ6-MW03A
EFDZ6-MW03B
LF08-MW07A
LF08-MW07B
LF08-MW07C
LF08-MW02C
LF08-MW05A
LF08-MW05B
LF08-MW05C
LF08-MW16C
LF08-MW01C
LF08-MW01A
EFDZ5-MW01
EFDZ5-MW02
EFDZ5-MW03
EFDZ5-MW04
APPROX. LIMITS LANDFILL #8
THIRTEENTH STREET
TWELFTH
TENTH
SEVENTH
FIFTH
"O" STREET
"P" STREET
"Q" STREET
"R" ST
SKYLINE DRIVE
NATIONAL ROAD
REESE DRIVE
RAIDER DR.
PEPPERTREE
CINNABAR
NUTMEG CT.
ASHLEY CT.
SUDBURY
BURNS
BROMLEY
HIGHLAND CT.
DRIVE
SAN
N
0
200'
400'

FIGURE E-13
OU9 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG4.DGN 3/11/98 DLB

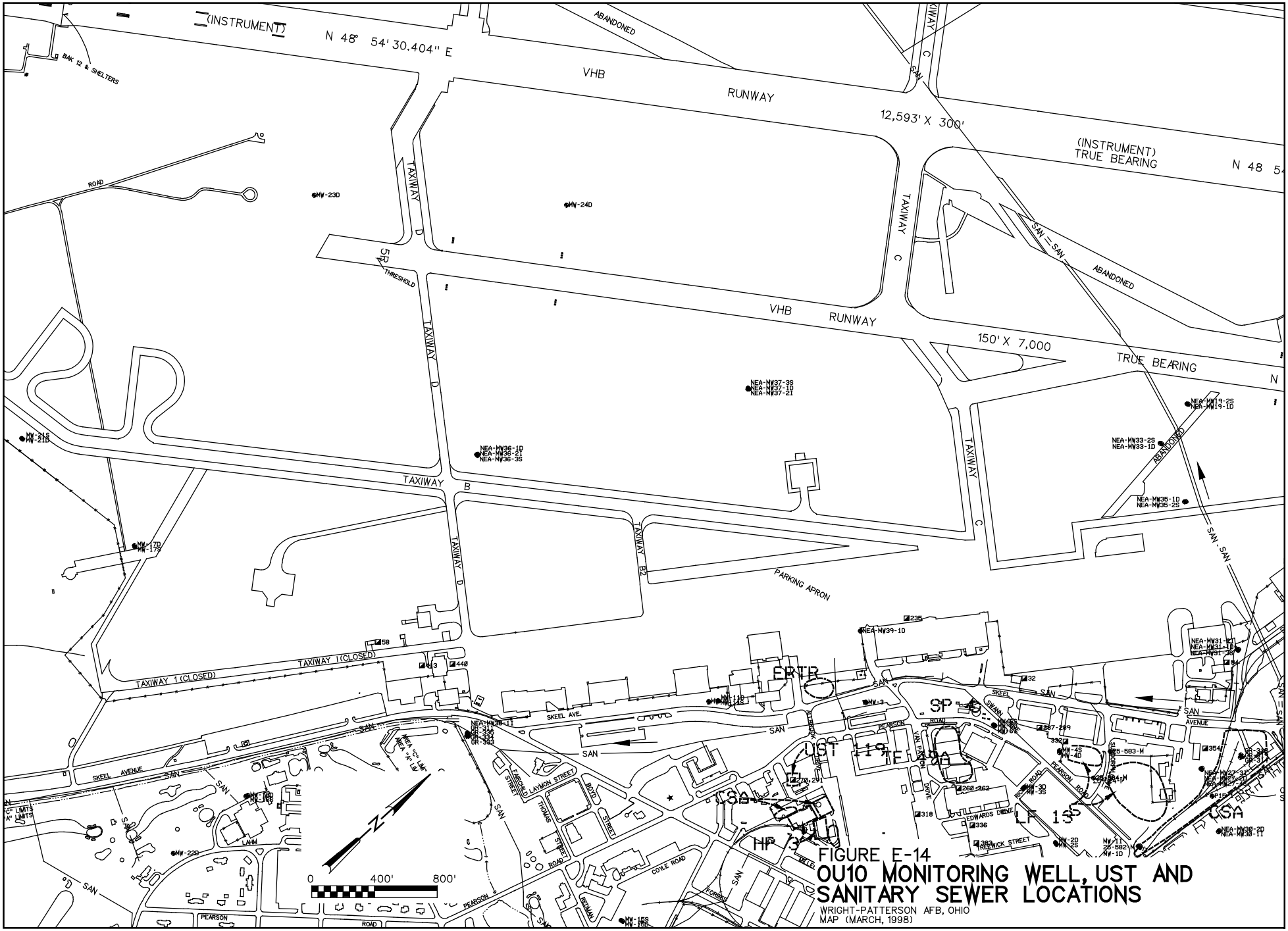


FIGURE E-14

OU10 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS

WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

I: 70206 DRAWINGS GWATER OU10FIG3.DGN 3/11/98 DLB

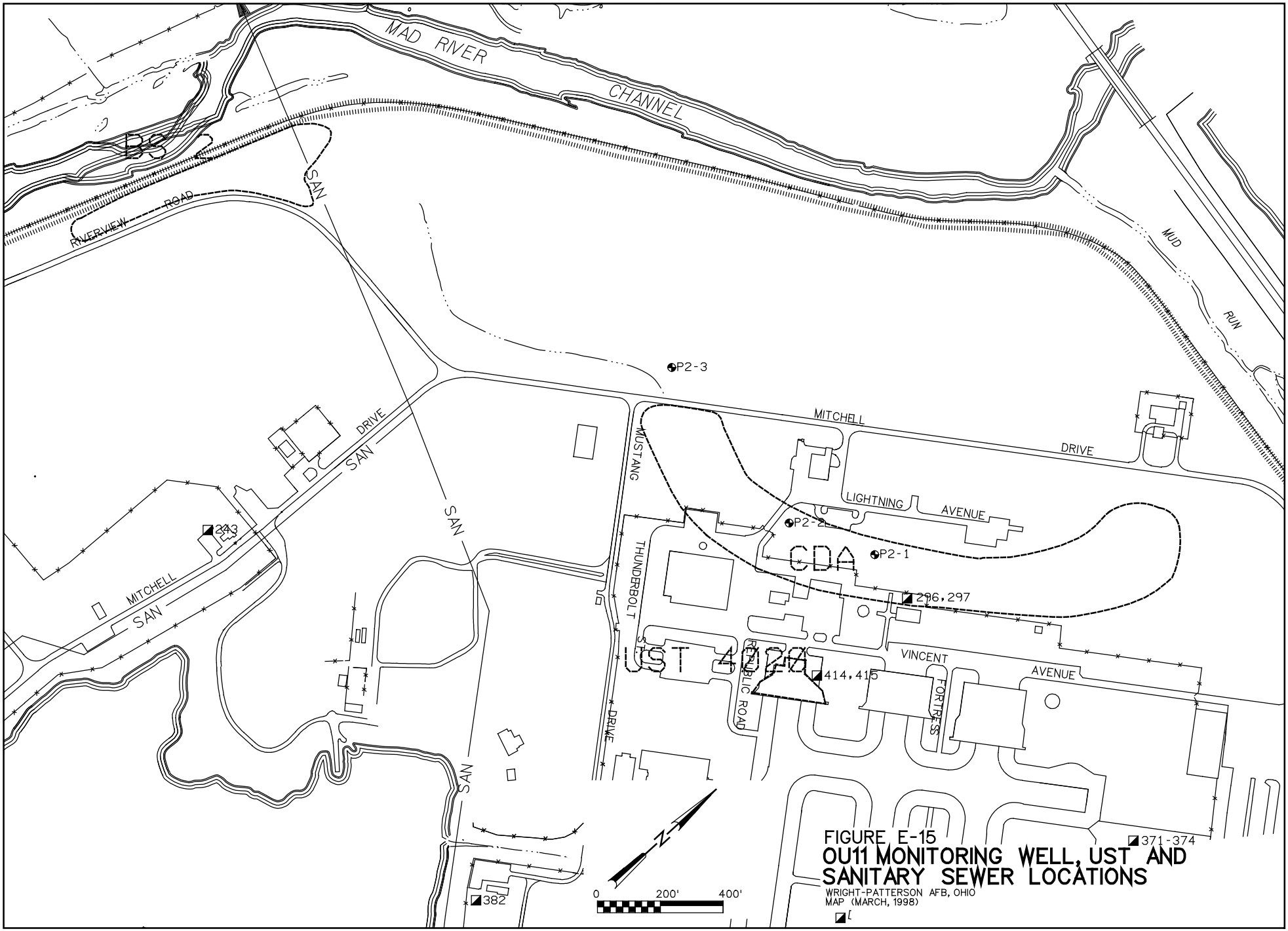


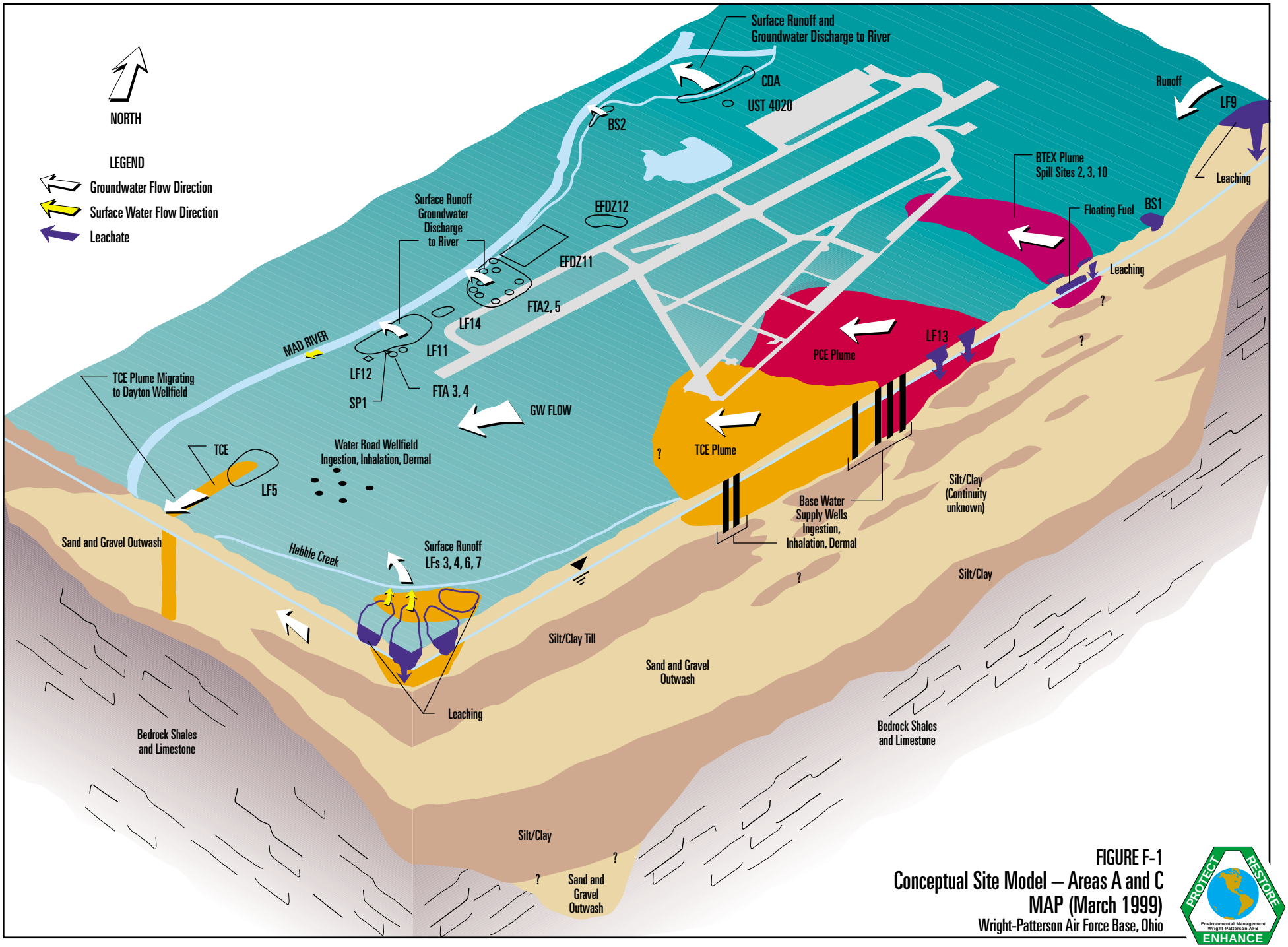
FIGURE E-15
OU11 MONITORING WELL, UST AND SANITARY SEWER LOCATIONS
WRIGHT-PATTERSON AFB, OHIO
MAP (MARCH, 1998)

APPENDIX F
CONCEPTUAL SITE MODELS

Appendix F
Conceptual Site Models

OUs having similar contaminants, transport pathways, and receptors were grouped together for development of conceptual site models. Conceptual models were not developed for individual sites or OUs because of their large number.

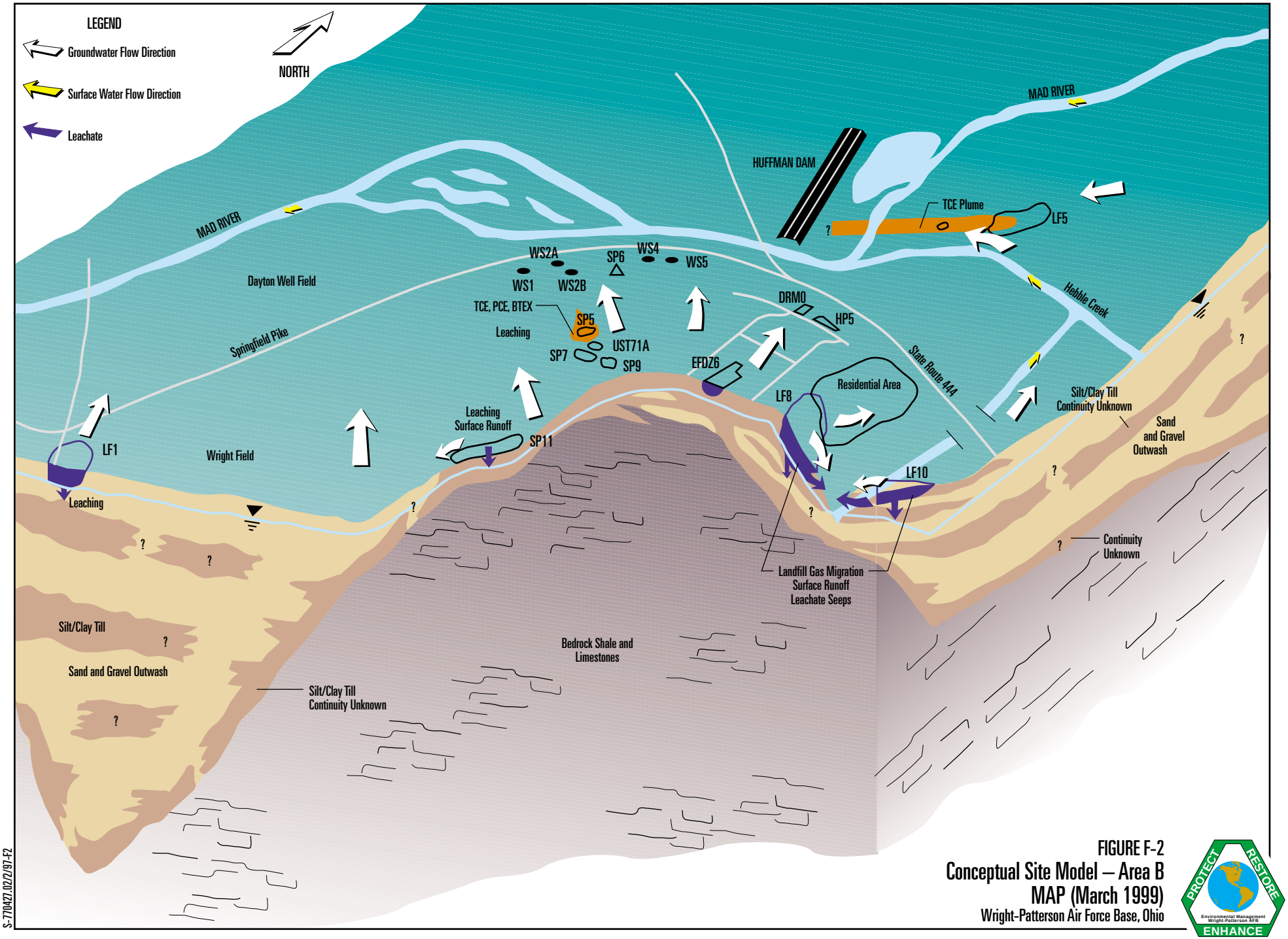
One conceptual model was developed for Areas A and C (OUs 2, 3, 4, 5, 7, 10, and 11) and one was developed for Area B (OUs 1, 6, 8, 9, 12, and Areas of Concern). The conceptual models presented here reflect the sites typical for the OUs. The conceptual model for OUs in Areas A and C is presented in Table F-1 and Figure F-1. The conceptual site model for Area B is presented in Table F-2 and Figure F-2.



S-770427.02-2/97-F1

FIGURE F-1
Conceptual Site Model – Areas A and C
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management Wright-Patterson AFB



S-770427.02/2/97-F2

FIGURE F-2
Conceptual Site Model – Area B
MAP (March 1999)
Wright-Patterson Air Force Base, Ohio

PROTECT RESTORE ENHANCE
Environmental Management Wright-Patterson AFB

OU Description and Source Characterization	Migration Pathways	Exposure Routes and Receptors	Contaminants					
			Principal Contaminants	Background	ARAR	Source	Exceedance of ARAR	PRG[1]
OU2-SPs 2, 3, 10, BS1, LTCSA, CSP, CCSA, CSA OU3-LFs 11, 12, 14, FTAs 2, 3, 4, 5, EFDZs 11, 12, SP1 OU4-LFs 3, 4, 6, 7 OU5-LF 5, FTA1, BS4, GLT OU7-LF9 OU10-LF 13, HP3, SP4, TF49A, UST119 OU11-BS2, UST 4020, CDA	Soil	Ingestion-worker, visitor, wildlife Dermal-worker, visitor, wildlife	TCE	ND	none			
			PCE	ND	none			
			Benzene	ND	none			
			Ethyl benzene	ND	none			
			Toluene	ND	none			
			Xylene	ND	none			
			PAHs	1	none			
			Lead	1	none			
The majority of the sites are landfills (where a variety of hazardous substances such as solvents, paints, and plating solutions may have been disposed), spill, FTAs and UST sites (primarily petroleum contamination) and coal storage sites	Air	Inhalation of particulates and dust-worker, visitor	Data not available					
	Groundwater	Ingestion-resident, workers visitor Inhalation-resident Dermal-resident, worker	TCE	ND	5 µg/L	MCL	Yes	
			PCE	ND	5 µg/L	MCL	Yes	
			Vinyl Chloride	ND	2 µg/L	MCL	Yes	
			1,1,1 TCA	ND	200 µg/L	MCL	No	
			Benzene	ND	5 µg/L	MCL	Yes	
			Ethyl benzene	ND	700 µg/L	MCL	Yes	
			Toluene	ND	2,000 µg/L	MCL	Yes	
			Xylene	ND	0,000 µg/L	MCL	Yes	
	Surface Water	Ingestion-workers, visitors Dermal-workers, visitors Aquatic life	No consistent contamination identified					
	Sediment	Ingestion-workers, visitors Dermal-workers, visitors	PAHs	1				1

Notes:
1 To be determined for each OU.

Table F-1
Conceptual Site Model
Area A and C
Map (March 1999)
Wright-Patterson AFB, Ohio

OU Description and Source Characterization	Migration Pathways	Exposure Routes and Receptors	Contaminants					
			Principal Contaminants	Background	ARAR	Source	Exceedance of ARAR	PRG[1]
OU1-LFs 8 and 10 OU6-LFs 1 and 2, EFDZ 2 OU8-SPs 5, 6, 7, 9, 11 and UST 71A OU9-EFDZs 2, 3, 4, 5, 7, 8, 9, 10 and BS3 OU9-HP 5, EFDZ 6 and DRMO	Soil	Ingestion-worker, visitor, wildlife Dermal-worker, visitor, wildlife	TCE	ND	none			
			PCE	ND	none			
			Benzene	ND	none			
			Ethyl benzene	ND	none			
			Toluene	ND	none			
			Xylene	ND	none			
			PAHs	1	none			
			Lead	1	none			
The majority of the sites are landfills (where a variety of hazardous substances such as solvents, paints, and plating solutions may have been disposed), spill, and UST sites (primarily petroleum contamination), EFDSs (where unknown contaminants may have been disposed) and a coal storage site	Air	Inhalation of VOCs, particulates and dust-resident, worker, visitor	Data limited to OU1			Ohio Ambient Air Quality Standards		
			PCE	ND	160 µg/m^3		No	
			TCE	ND	160 µg/m^3		No	
			1,1,2 TCA	ND	160 µg/m^3		No	
			Carbon Disulfide	ND	160 µg/m^3		No	
			4-Methyl phenol	ND	160 µg/m^3		No	
			Naphthalene	ND	160 µg/m^3		No	
			2,4 Dimethyl phenol	ND	160 µg/m^3		No	
			Phenanthrene	ND	160 µg/m^3		No	
			Pyrene	ND	160 µg/m^3		No	
		Landfill gas migration-residents	Methane	ND	3.8x10^7 µg/m^3		No	
	Groundwater	Ingestion-resident, workers, visitor Inhalation-resident Dermal-resident, worker	TCE	ND	5 µg/L	MCL	Yes	
			PCE	ND	5 µg/L	MCL	Yes	
			1,2 DCE	ND	70 µg/L	MCL		
			Vinyl Chloride	ND	2 µg/L	MCL	Yes	
			1,1,1 TCA	ND	200 µg/L	MCL		
			Benzene	ND	5 µg/L	MCL	Yes	
			Ethyl benzene	ND	700 µg/L	MCL	Yes	
			Toluene	ND	2,000 µg/L	MCL	Yes	
			Xylene	ND	10,000 µg/L	MCL	Yes	

Table F-2
Conceptual Site Model
Area B
Map (March 1999)
Wright-Patterson AFB, Ohio
(Page 1 of 2)

OU Description and Source Characterization	Migration Pathways	Exposure Routes and Receptors	Contaminants					
			Principal Contaminants	Background	ARAR	Source	Exceedance of ARAR	PRG[1]
	Surface Water	Ingestion-residents, workers, visitors Dermal-residents, workers, visitors Aquatic life	No consistent contamination identified					
	Sediment	Ingestion-residents, workers, visitors Dermal-residents, workers visitors	PAHs	1				1

Notes:
1. To be determined for each OU.